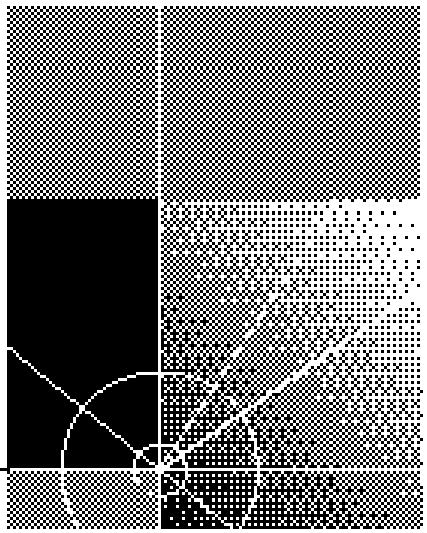
CoreBuilder® 7000 Family ATM Switches Installation & Startup Guide

Software Version 4.55 Base and Extended



http://www.3com.com/

Part No. DUA3700-0BAA06
Published January 2000

Downloaded from www.Manualslib.com manuals search engine

3Com Corporation
5400 Bayfront Plaza
Santa Clara, California
95052-8145

Copyright © 1999, 3Com Corporation. All rights reserved. No part of this documentation may be reproduced in any form or by any means or used to make any derivative work (such as translation, transformation, or adaptation) without written permission from 3Com Corporation.

3Com Corporation reserves the right to revise this documentation and to make changes in content from time to time without obligation on the part of 3Com Corporation to provide notification of such revision or change.

3Com Corporation provides this documentation without warranty, term, or condition of any kind, either implied or expressed, including, but not limited to, the implied warranties, terms or conditions of merchantability, satisfactory quality, and fitness for a particular purpose. 3Com may make improvements or changes in the product(s) and/or the program(s) described in this documentation at any time.

If there is any software on removable media described in this documentation, it is furnished under a license agreement included with the product as a separate document, in the hard copy documentation, or on the removable media in a directory file named LICENSE.TXT or !LICENSE.TXT. If you are unable to locate a copy, please contact 3Com and a copy will be provided to you.

UNITED STATES GOVERNMENT LEGEND

If you are a United States government agency, then this documentation and the software described herein are provided to you subject to the following:

All technical data and computer software are commercial in nature and developed solely at private expense. Software is delivered as "Commercial Computer Software" as defined in DFARS 252.227-7014 (June 1995) or as a "commercial item" as defined in FAR 2.101(a) and as such is provided with only such rights as are provided in 3Com's standard commercial license for the Software. Technical data is provided with limited rights only as provided in DFAR 252.227-7015 (Nov 1995) or FAR 52.227-14 (June 1987), whichever is applicable. You agree not to remove or deface any portion of any legend provided on any licensed program or documentation contained in, or delivered to you in conjunction with, this User Guide.

Unless otherwise indicated, 3Com registered trademarks are registered in the United States and may or may not be registered in other countries.

3Com, the 3Com logo, CoreBuilder, Net Age, NETBuilder II, SuperStack, Transcend, and TranscendWare are registered trademarks of 3Com Corporation. ATMLink is a trademark of 3Com Corporation. 3ComFacts is a service mark of 3Com Corporation.

CompuServe is a registered trademark of CompuServe, Inc. Microsoft, MS-DOS, Windows, and Windows NT are registered trademarks of Microsoft Corporation.

HP OpenView is a registered trademark of Hewlett-Packard Company. SunNet Manager is a trademark of the Sun Microsystems, Inc.

All other company and product names may be trademarks of the respective companies with which they are associated.

Guide written by Laura Novich. Edited by Debbie Zioni. Illustrated by Pearl Goldberg.

Downloaded from www.Manualslib.com manuals search engine

CONTENTS

ABOUT THIS GUIDE

Finding Specific Information in This Guide 9
Conventions 10
Documentation 11
- CoreBuilder 7000 Family ATM Switch Documents 11
- Related Documents 12
- Documentation Road Map 13

Documentation Comments 14
Year 2000 Compliance 14

1 OVERVIEW

CoreBuilder 7000 Family 16
- CoreBuilder 7000 Switch 16
- CoreBuilder 7000HD Switch 16

Component Summary 17
- Installing the CoreBuilder 7000 Family ATM Switch 18
- Starting up the CoreBuilder 7000 Family ATM Switch 19
- Redundancy in the CoreBuilder 7000 Family ATM Switch 19
- Troubleshooting 19

2 UNPACKING INSTRUCTIONS

Unpacking the CoreBuilder 7000 Family ATM Switch 21
Taking Inventory 22

3 INSTALLING A COREBUILDER 7000 FAMILY ATM SWITCH

Safety Precautions 23
Vorsichtsmaßnahmen 24
Mesures de sécurité 24
Preparation 25

Downloaded from www.Manualslib.com manuals search engine

Table Top Installation 25
Distribution Rack Installation 26
Unit and Rack Preparation 26
Mounting the CoreBuilder 7000 Family ATM Switch 28

4 INSTALLING AND CONNECTING COREBUILDER MODULES
Safety Precautions 29
Vorsichtsmaßnahmen 30
Mesures de sécurité 30
Power Supply Module 30
Installing a Power Supply Module 31
Replacing a Redundant Power Supply Module 31
Switch Module 32
Installing a Switch Module 32
Replacing a Switch Module 33
Setting up Switch Module Redundancy 34
Setting up Switch Module Hardware Redundancy 35
Setting up Hardware Redundancy and LANE Redundancy 35
4-Port Interface Module 41
ATM Interface Daughter Cards 41
Installing the ATM Interface Daughter Cards 43
Installing a 4-Port Interface Module 43
Replacing a 4-Port Interface Module 44
Fan Tray 44
Connecting to Network Devices 44
Connecting to an ATM Optical Interface 45
Connecting the Control Terminal 46
Connecting to the Ethernet Port 46
Connecting to the Power Source 47

5 POWER-ON
System States 49
System States and Switching Module LEDs 49
System Power-on 51
Software Loading and Diagnostics 51
Indicators 51
4-Port Interface Module LEDs 51

Downloaded from www.Manualslib.com manuals search engine

DS-3 Status LEDs 52

6 CONFIGURING THE COREBUILDER 7000 FAMILY ATM SWITCH

Logging in to the LMA 55
Integrated Fast Setup 56
Setup Modes 58
Setup Procedure Sections 59
Entering Data 60
Navigation Aids 60
Integrated Fast Setup Operation 60
Additional Switch Configuration 72
Viewing Network Statistics 74
Storing and Retrieving Configuration Parameters 75
Configuration Upload/Download 75
Uploading Selected Data Types 76
Organizing Configuration Files 76
Activating the Downloaded Configuration 77
Uploading the Configuration of a Card 77
Downloading the Configuration of a Card 79
Loading Software and Configuration Data by Utilities 81
Running a Batch File 82
Returning to Operational Mode 82
Upgrading from E-IISP to PNNI 83
PNNI in E-IISP 83

7 REDUNDANCY IN THE COREBUILDER 7000 FAMILY ATM SWITCH

Redundant Power Supply 85
Types of Power Supplies 85
Power Supply Operation 86
Calculating the Power Consumption of CoreBuilder Switch 86
Required Power Supply for Various CoreBuilder Installations 89
Providing Redundancy for Various Power Loads 90
Power Supply Specifications 91

Downloaded from www.Manualslib.com manuals search engine

8 TROUBLESHOOTING

Solving Common Problems 93
Power Supply Troubleshooting 94
Related Diagnostic Procedures 95

A ATM SWITCH FA/24 CELL SWITCHING MODULE SPECIFICATIONS

B SAFETY INFORMATION

Bodily Harm 101
Körperliche Schäden 102
Dommages corporels 102
Equipment Damage 102
Schäden am Gerät 103
Dommage causé à l'équipement 103

C SITE REQUIREMENTS

Environmental and Safety Requirements 105
- Protective Grounding 105
- Environmental Specifications 105

Thermal Recommendations 106
- General Recommendations 106
- Power and Heat Specifications 106

Wiring Closet Considerations 106
Distribution Rack Requirements 107
- Mechanical Requirements 107

D CABLING REQUIREMENTS

Installing New Cabling 109
- Cable Labeling and Record Keeping 109

ATM Cabling 110
- Caring for Fiber Optic Transceivers 111
- Multi-mode Fiber Standards 112
- Calculating Insertion Losses for Unlike Fibers 113

Downloaded from www.Manualslib.com manuals search engine

Verifying Modal Bandwidth 115
Single Mode Fiber Standards 115
Comparing Fiber to Specifications 116
Verifying Maximum Attenuation for Mixed Fibers 118
DS-3 Coax Cables 118
Ethernet Cabling 118
Cable Pinouts 119

E TECHNICAL SUPPORT

Online Technical Services 123
World Wide Web Site 123
3Com Knowledgebase Web Services 123
3Com FTP Site 124
3Com Bulletin Board Service 124
3Com Facts Automated Fax Service 125
Support from Your Network Supplier 125
Support from 3Com 125
Returning Products for Repair 127

GLOSSARY

3COM CORPORATION LIMITED WARRANTY

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

About This Guide

The *CoreBuilder® 7000 Family ATM Switches Installation and Startup Guide* provides all the information you need for installing and powering up the CoreBuilder 7000 family ATM switch in ATM networking environments. It is applicable for both the Base and Extended versions of the software.

This guide is intended for the system administrator, network equipment technician, or network manager who is responsible for installing and managing network hardware such as the CoreBuilder 7000 family ATM switch. It assumes a working knowledge of network operations and familiarity with communications protocols that are used in networks. No prior knowledge of 3Com's CoreBuilder 7000 networking equipment is necessary to understand this manual.

If the information in the release notes that are shipped with this product differs from the information in this guide, follow the instructions in the release notes.

Finding Specific Information in This Guide

This table shows the location of specific information in this guide:

Table 1 Information in this Guide

If you are looking for	Turn to
An overview of the CoreBuilder 7000 family ATM switch and components	Chapter 1
Instructions for unpacking the CoreBuilder 7000 family ATM switch	Chapter 2
Information about installing your CoreBuilder 7000 family ATM switch	Chapter 3
How to install and hot swap modules and cards and connect cables	Chapter 4
The system power-up procedure and initial system checks	Chapter 5

Downloaded from www.Manualslib.com manuals search engine

Table 1 Information in this Guide (continued)

How to configure the CoreBuilder 7000 family ATM switch	Chapter 6
How to use the Fast Setup procedure	Chapter 6
Installing a redundant power supply	Chapter 7
Installing a redundant switching module	Chapter 7
How to troubleshoot your system	Chapter 8
Hardware and protocol specifications	Appendix A
Safety information	Appendix B
Site Requirements	Appendix C
Cabling requirements	Appendix D
Getting technical support	Appendix E

Conventions

Table 2 and Table 3 list conventions that are used throughout this guide.

Table 2 Notice Icons

Icon	Notice Type	Description
	Information note	Information that describes important features or instructions
	Caution	Information that alerts you to potential loss of data or potential damage to an application, system, or device
	Warning	Information that alerts you to potential personal injury

Table 3 Text Conventions

Convention	Description
`Screen displays`	This typeface represents information as it appears on the screen.
`Syntax`	The word "syntax" means that you must evaluate the syntax provided and then supply the appropriate values for the placeholders that appear in angle brackets. Example: To enable RIPIP, use the following syntax: `SETDefault !<port> -RIPIP CONTrol = Listen` In this example, you must supply a port number for <port>.

Downloaded from www.Manualslib.com manuals search engine

Table 3 Text Conventions (continued)

Convention	Description
`Commands`	The word "command" means that you must enter the command exactly as shown and then press Return or Enter. Commands appear in bold. Example: To remove the IP address, enter the following command: **`SETDefault !0 -IP NETaddr = 0.0.0.0`**
The words "enter" and "type"	When you see the word "enter" in this guide, you must type something, and then press Return or Enter. Do not press Return or Enter when an instruction simply says "type."
Keyboard key names	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: Press Ctrl+Alt+Del
Words in *italics*	Italics are used to: ■ Emphasize a point. ■ Denote a new term at the place where it is defined in the text. ■ Identify menu names, menu commands, and software button names. Examples: From the *Help* menu, select *Contents*. Click *OK*.

Documentation

This section provides information about supporting documentation, including:

- CoreBuilder 7000 Family ATM Switch Documents
- Related Documents
- Documentation Road Map

CoreBuilder 7000 Family ATM Switch Documents

The CD-ROM that comes with your system contains on-line versions of the documents:

- *CoreBuilder 7000 Family ATM Switches Installation and Startup Guide*

  This guide describes how to install and setup a CoreBuilder 7000 family ATM switch.

Downloaded from www.Manualslib.com manuals search engine

- *CoreBuilder 7000 Family ATM Switches Management Guide*

  This guide explains how to configure the CoreBuilder 7000 family ATM switch.

- *CoreBuilder 7000 Family ATM Switches Operations Guide*

  This guide contains a detailed explanation of the CoreBuilder 7000 family ATM Switch theory of operation.

- *Release Notes (on separate CD-ROM)*

  The release notes contain information about the latest software release.

The complete documentation for the CoreBuilder 7000 family is shown in Table 4.

Table 4 CoreBuilder 7000 Documentation

Document	3Com Part Number
CoreBuilder 7000 Family ATM Switches Management Guide	DMA3700-0AAA01
CoreBuilder 7000 Family ATM Switches Operations Guide	DOA3700-0AAA01
CoreBuilder 7000 Family ATM Switches Installation and Startup Guide	DUA3700-0BAA05
CoreBuilder 7000HD Switch Release Notes	

Related Documents

Documentation related to the CoreBuilder 7000 family ATM switch is presented in Table 5.

Table 5 Related Documentation

Document	3Com Part Number
CoreBuilder 7200 Ethernet/ATM Interface Card Installation and Administration Guide	DUA7200-0BAA01
CoreBuilder 7200 Ethernet/ATM Interface Card Operation Guide	DUA7200-0AAA01
CoreBuilder 7400 Ethernet/ATM Interface Card User Guide	DUA7400-0AAA01
CoreBuilder 7600 Fast Ethernet Interface Card User Guide	DUA7600-0AAA01
8-Port Board ATM Interface Card User Guide	DUA3708-0AAA01
622 Mbps ATM Interface Module User Guide	DUA3762-1AAA01

Downloaded from www.Manualslib.com manuals search engine

Table 5 Related Documentation (continued)

Document	3Com Part Number
DS-3 Interface Module Installation Guide	DIA00DS-1AAA01
FastBUS Board User Guide	DUA37FB-1AAA01
SuperStack II Switch 2700 Operation Guide	DUA2700-0AAA02
SuperStack II Switch 2700 Installation & Setup Guide	DUA2700-0BAA02
SuperStack II Switch 2700 Adminstration Guide	DUA2700-OCAA02
ATMvLAN Manager User Guide (UNIX 4.22)	09-1046-002
ATMvLAN Manager User Guide ('97 Windows NT)	09-1112-001

Documentation Road Map

The following table helps you locate the information you need.

If you want to...	Read...
Learn about new features or corrections in the CoreBuilder 7000 family ATM switch software.	*Release Notes*
Learn about changes to the CoreBuilder 7000 family ATM switch's documentation.	*Release Notes*
Get an overview of the CoreBuilder 7000 family ATM switch system components.	*Installation and Startup Guide*
Prepare your site for CoreBuilder 7000 family installation.	*Installation and Startup Guide*
Learn about various configurations in which you can install your CoreBuilder 7000 family ATM switch.	*Installation and Startup Guide*
Install and power up your CoreBuilder 7000 family ATM switch.	*Installation and Startup Guide*
Learn about how you administer and manage the CoreBuilder 7000 family ATM switch.	*Management Guide*
Learn about ATM and how it is implemented in the CoreBuilder 7000 family ATM switch.	*Operations Guide*
Learn about LAN Emulation and how it is implemented in the CoreBuilder 7000 family ATM switch.	*Operations Guide*
Find out what type of configuration tasks you can perform on the CoreBuilder 7000 family ATM switch.	*Operations Guide*
Quickly set up your CoreBuilder 7000 family ATM switch for management access.	*Installation and Startup Guide*
Perform configuration or administration tasks using the Administration Console.	*Management Guide*

Downloaded from www.Manualslib.com manuals search engine

If you want to...	Read...
Get assistance.	Technical Support Appendix in any guide

Documentation Comments

Your suggestions are very important to us. They help us make our documentation more useful to you.

Please send e-mail comments about this guide to:

sdtechpubs_comments@3Com.com

Please include the following information when commenting:

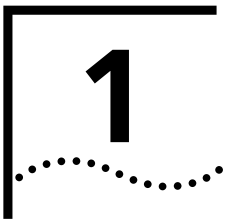
- Document Title
- Document Part Number (found on back page of each document and in Table 4)
- Page Number (if appropriate)

Year 2000 Compliance

For information on Year 2000 compliance and 3Com products, visit the 3Com Year 2000 Web page:

http://www.3com.com/products/yr2000.html

Downloaded from www.Manualslib.com manuals search engine



OVERVIEW

This chapter contains an overview of the CoreBuilder® 7000 family ATM switches including:

- CoreBuilder 7000 Family
- Component Summary
- Installing the CoreBuilder 7000 Family ATM Switch
- Starting up the CoreBuilder 7000 Family ATM Switch
- Redundancy in the CoreBuilder 7000 Family ATM Switch
- Troubleshooting

For an overview of the operation of the switch, see Chapter 1 in the Management Guide.

Downloaded from www.Manualslib.com manuals search engine

CoreBuilder 7000 Family

The CoreBuilder 7000 family ATM switches are modular, high-performance ATM switches designed to increase the capacity and manageability of enterprise networks. The CoreBuilder 7000 family ATM switches allow you to scale your network performance to extremely high levels as your network grows and evolves. The CoreBuilder 7000 family ATM switches include the CoreBuilder 7000 ATM switch and the CoreBuilder 7000HD High Density ATM switch.

CoreBuilder 7000 Switch

The CoreBuilder 7000 switch includes all the features and flexibility necessary to handle a range of needs on both the ATM backbone and the ATM network boundary. The CoreBuilder 7000 switch provides a backbone solution for small and medium size networks and is a modular platform that provides a switching fabric for ATM, Ethernet/ATM and Fast Ethernet interface cards. The 2.5 Gbps CoreBuilder 7000 switching engine supports switched LAN interfaces in the wiring closets of large networks, and is well suited for the backbone of small to medium-sized networks.

CoreBuilder 7000HD Switch

The CoreBuilder 7000HD switch supports demanding enterprise backbones and high-density data center applications, providing high-performance ATM switching at both the network core and boundary. The CoreBuilder 7000HD platform features a 5.0 Gbps switching engine that provides capacity for up to 32 non-blocking OC-3 155 ports or up to 8 non-blocking OC-12 622 Mbps ports. Using an enhanced i960CF processor, the CoreBuilder 7000HD switch supports faster signaling, expanded memory, and higher performance LAN Emulation services. The switch also accommodates scalable, high density Ethernet/ATM, Fast Ethernet and Gigabit Ethernet interface cards. The four-slot chassis allows for a mixture of port types with versatile media options for a wide range of network configurations.

Downloaded from www.Manualslib.com manuals search engine

Component Summary

Figure 1 shows the components of the CoreBuilder 7000 family ATM switch.

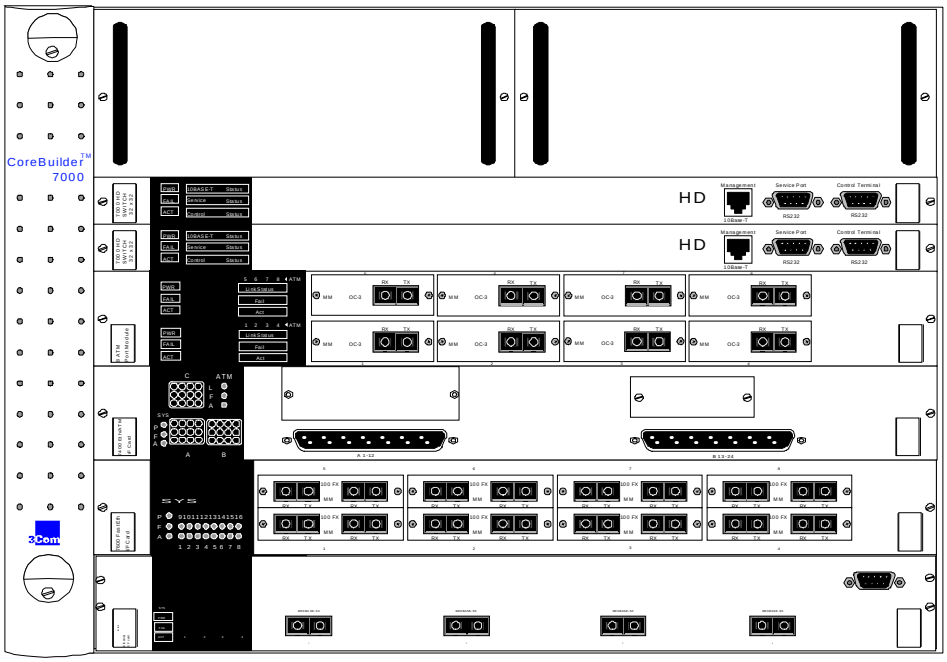


Figure 1 Components of the CoreBuilder 7000 Family ATM Switch

Enclosure

The housing for the CoreBuilder 7000 family ATM switch contains 2 slots for switching modules and 4 slots for interface cards, 2 places for power supplies and a ventilator fan tray. The high speed ATM switching backplane is located inside the back of the surrounding enclosure.

Power Supply

The power supply is located at the top of the front panel. The unit is switched on and off by connecting and disconnecting the power cord on the face of the power supply unit. A second power supply may be installed for redundancy.

Switching Module

The two slots just under the power supply contain switching modules, one slot for the active switching module and the other slot for the redundant switching module.

Downloaded from www.Manualslib.com manuals search engine

The switching module is the core switching engine of the CoreBuilder 7000 family ATM switch, controlling and monitoring passive backplane and ATM activity. The switching module has a control port for connection to a terminal, a management port for connection to a network management station, and a service port for use by 3Com technicians.

Interface Module

The next four slots contain interface modules. These can be of many different types. See Chapter 2 in the Operations Guide for details.

Fans

For ventilation a fan tray with 6 fans is located at the left side of the unit.

Installing the CoreBuilder 7000 Family ATM Switch

The CoreBuilder 7000 family ATM switch may be installed according to the stages shown in Table 6.

Table 6 Installing the CoreBuilder 7000 Family ATM Switch

	Installation Stage	Chapter
1	Unpacking the CoreBuilder 7000 family ATM switch	2
2	Installing the CoreBuilder 7000 family ATM switch chassis either on table-top or in a distribution rack	4
3	Installing a main and redundant power supply module in the CoreBuilder 7000 family ATM switch chassis	5
4	Installing a main and redundant switch module in the CoreBuilder 7000 family ATM switch chassis	5
5	Setting up switch module hardware redundancy and LANE redundancy	5
6	Installing 4-Port interface modules in the CoreBuilder 7000 family ATM switch chassis	5
7	Installing or replacing other interface modules in the CoreBuilder 7000 family ATM switch chassis	See respective guide
8	Installing or replacing the fan tray	5
9	Connecting to network devices, ATM optical interface, control terminal, Ethernet port and power source	5

Downloaded from www.Manualslib.com manuals search engine

Starting up the CoreBuilder 7000 Family ATM Switch

The CoreBuilder 7000 family ATM switch is powered on and configured according to the stages shown in Table 7.

Table 7 Powering-on and Configuring the CoreBuilder 7000 Family ATM Switch

Stage		Chapter
1	Powering up the CoreBuilder 7000 family ATM switch	6
2	Understanding system states and switching module LEDs	6
3	Logging in to the LMA	7
4	Configuring the CoreBuilder 7000 family ATM switch by the Integrated Fast Setup procedure	7
5	Performing additional configuration of the CoreBuilder 7000 family ATM switch by individual LMA commands	7
6	Viewing network statistics	7

Redundancy in the CoreBuilder 7000 Family ATM Switch

The CoreBuilder 7000 family ATM switch is designed to meet the requirements of environments where network interruptions cannot be tolerated. The CoreBuilder 7000 family ATM switch platform has a fully redundant design, with dual load-sharing power supplies and redundant switching engines. All CoreBuilder 7000 family interface cards and switching engines are hot swappable to ensure continuous operation during configuration and servicing.

For information about determining the required power supply for various CoreBuilder 7000 family ATM switch installations and providing redundancy for various power loads. See "Redundant Power Supply" on page 85.

For information about using the redundant switching module, see Chapter 10 in the Operations Guide.

In addition to hardware redundancy, the CoreBuilder 7000 family ATM switch also provides redundant LANE services which are managed by the Transcend Network Management System. Each switch contains a complete set of LES and LECS functionality. In case of failure, LANE services can be transferred to another CoreBuilder 7000 family ATM switch elsewhere in the network.

Troubleshooting

This guide contains a number of troubleshooting procedures for solving common problems. For information about troubleshooting, see Chapter 8.

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

2 UNPACKING INSTRUCTIONS

This chapter describes how to unpack the CoreBuilder® 7000 family ATM switch and contains the following topics:

- Unpacking the CoreBuilder 7000 Family ATM Switch.
- Taking Inventory

Unpacking the CoreBuilder 7000 Family ATM Switch

Before unpacking the CoreBuilder 7000 family ATM switch, examine it carefully for any signs of damage. After unpacking the system as described below, you may begin the appropriate installation procedure in Chapter 3.

If there are any visible signs of damage to the system packaging, do not begin installation. Contact 3Com Technical Support or your distributor for assistance.

To unpack the CoreBuilder 7000 family ATM switch, follow these instructions:

1. Remove the clips that attach the shipping container to the shipping tray of the packaging. The clips are located on opposite sides of the shipping container (two per side).
2. Slowly lift the shipping container off the shipping tray. The device is now visible.
3. Remove the accessory box and the mounting brackets from the top foam. The mounting brackets are recessed into the foam.
4. Lift the top foam off the device.
5. Two persons are required for this step. With each person grasping the hand-hold of the sling with one hand and holding the side of the system with the other hand, slowly pull the device out of the foam and place it where desired.

Downloaded from www.Manualslib.com manuals search engine

Save the packaging in the event that you must return the CoreBuilder 7000 Family to 3Com or your distributor.

Taking Inventory

The CoreBuilder 7000 family ATM switch package should contain the items described in the following list. Check these items against the packing slip. Contact 3Com Technical Support at 1-800-992-2446 if any item is missing.

- 1 CoreBuilder 7000 family ATM switch
- 1 CD-ROM entitled 3Com Publications On Line. This CD-ROM contains all documentation for the CoreBuilder 7000 Family ATM Switch Software Version 4.5 and other related products
- 1 CD-ROM containing the software and Release Notes
- 1 hardware kit including:
  - 1 pair of mounting brackets (for distribution rack installation)
  - 10 screws, M4 x 8 Phillips (for mounting brackets)
  - 4 rubber feet (for table installation)
  - 4 screws, M4 x 8 Phillips (for rubber feet)
- 1 or 2 power cord(s) (2.5 meters each)
  - 1 strain relief bracket per power cord
  - 3 screws, M3 x 8 Phillips

Optional accessories that you ordered with your system may be shipped separately.

Check the packing slip for other items that you ordered.

Downloaded from www.Manualslib.com manuals search engine

3 INSTALLING A COREBUILDER 7000 FAMILY ATM SWITCH

This chapter contains instructions for installing the CoreBuilder® 7000 family ATM switch on a table top or in a distribution rack and making the necessary hardware connections. The topics covered in this chapter include:

- Safety Precautions
- Preparation
- Table Top Installation
- Distribution Rack Installation

Safety Precautions

Read the following safety precautions carefully to reduce the risk of electric shock and fire.

- All servicing should be undertaken ONLY by qualified service personnel. There are no user serviceable parts inside the unit.
- The CoreBuilder 7000 family ATM switch internal power supply provides for automatic selection of either 100-120 VAC or 200-240 VAC, 60/50 Hz, as indicated on the safety label adjacent to the power inlet. ENSURE that the available voltage supply at the mains is within one of these two ranges.
- DO NOT operate the unit in a location where the maximum ambient temperature exceeds 40 degrees C.
- Ensure that the chassis ventilation openings in the unit are NOT BLOCKED.
- DO NOT plug in, turn on or attempt to operate an obviously damaged unit.
- Unplug the power supply cord from the wall socket BEFORE attempting to remove and/or replace the power supply.

Downloaded from www.Manualslib.com manuals search engine

- The system has a redundant power supply option. Disconnecting one power supply cord disconnects one power supply module only. To isolate the unit completely from the mains, disconnect all power supply cords.

Vorsichtsmaßnahmen

Lesen Sie die folgenden Vorsichtsmaßnahmen sorgfältig, um das Risiko von Stromschlag oder Brandgefahr zu vermindern.

- Jede Wartung sollte NUR von befugtem Wartungspersonal durchgeführt werden. Das Aggregat enthält keine vom Anwender zu wartenden Teile.
- Das interne Netzteil des CoreBuilder 7000 family ATM switch ermöglicht automatische Wahl von 100-120 V AC oder 200-240 V AC, 60/50 Hz, wie auf dem Sicherheitsetikett beim Netzeingang vermerkt. VERGEWISSERN SIE SICH, daß der vom Netz gelieferte Strom einer von diesen beiden Spannungsbereichen entspricht.
- Nehmen Sie das Gerät NICHT in Betrieb, falls die Temperatur der Umgebung 40 Grad C übersteigt.
- Gehen Sie sicher, daß die Lüftungsöffnungen am Gehäuse NICHT BLOCKIERT sind.
- Eine offensichtlich schadhafte Einheit soll weder angeschlossen, eingeschaltet noch in Betrieb genommen werden.
- Ziehen Sie das Netzkabel aus Steckdose an der Wand, BEVOR Sie versuchen, das Netzteil zu entfernen und/oder zu ersetzen.
- Das System verfügt über ein wahlweises Ersatzstromaggregat.Das Trennen der Verbindung eines Netzkabels unterbricht die Verbindung nur mit einem Netzteil-Modul. Um das Gerät völlig vom Stromnetz zu trennen, müssen alle Netzkabel gelöst werden.

Mesures de sécurité

Lire attentivement les mesures de sécurité afin de réduire les risques d'électrocution et d'incendie.

- Le service après-vente ne devra être effectué que par un personnel qualifié. Aucune pièce de l'unité ne peut être réparée par le simple utilisateur.

Downloaded from www.Manualslib.com manuals search engine

- Le CoreBuilder 7000 family ATM switch d'alimentation interne permet une sélection automatique de 100 -120 VAC ou 200-240 VAC, 60/50Hz comme stipulé sur le label de sécurité placé près de l'ouverture d'alimentation. Veiller à ce que le voltage du secteur soit bien compris entre les valeurs mentionnées ci-dessus.
- Ne pas faire fonctionner l'unité dans un endroit où la température ambiante maximale dépasse 40 degrés C.
- Ne jamais essayer de brancher, allumer ou faire fonctionner une unité apparemment endommagée.
- S'assurer que les ouvertures de la ventilation du chassis de l'unité ne sont pas bloquées.
- Débrancher le fil d'alimentation au secteur de la prise murale AVANT d'essayer de déplacer ou de remplacer l'unité d'alimentation.
- Le système dispose d'un système redondant d'alimentation au secteur. Le fait de débrancher l'une des sources d'alimentation ne débranche que l'un des modules d'alimentation au secteur. Pour isoler entièrement l'unité de toute alimentation, débrancher tous les câbles d'alimentation.

Preparation

Before beginning the installation procedures in this chapter, ensure that the CoreBuilder 7000 family ATM switch is placed close to the location where it will be installed and that the mounting brackets and hardware kit supplied with the system are readily available. You will also need a No. 2 Phillips screwdriver.

The hardware kit contains:

- 1 pair of mounting brackets (for distribution rack installation)
- 10 screws, M4 x 8 Phillips (for mounting brackets)
- 4 rubber feet (for table installation)
- 4 screws, M4 x 8 Phillips (for rubber feet)

Table Top Installation

The CoreBuilder 7000 family ATM switch is ready for table top installation as shipped.

Downloaded from www.Manualslib.com manuals search engine

To provide a firmer base for the unit, you can choose to attach four rubber feet to the switch chassis. Use the rubber feet and the four M4 x 8 Phillips screws included in the hardware kit.

To insert the power supply, switching modules, and interface cards, configure optical ports for the interface modules and connect network cabling and power to the unit see Chapter 4.

Distribution Rack Installation

You can mount the CoreBuilder 7000 family ATM switch in a 19-inch distribution rack. This section describes how to prepare the unit and the distribution rack, and mount the unit in the distribution rack. Please read all of the instructions carefully before beginning the installation.

For the basic mechanical and space requirements for the distribution rack, see "Distribution Rack Requirements" on page 107.

Unit and Rack Preparation

To prepare the CoreBuilder 7000 family ATM switch and distribution rack for installation:

1. Attach the mounting brackets onto the sides of the CoreBuilder 7000 family ATM switch using the mounting bracket screws (M4 x 8 Phillips).
2. Determine whether or not the distribution rack has threaded holes. If the holes are threaded, see "Mounting the CoreBuilder 7000 Family ATM Switch" on page 28.
3. If the holes are not threaded, you must insert "G" clips. To determine where to insert "G" clips, locate the top of a universal mounting hole pattern on the left mounting rail. In the universal rail pattern, the spacing between holes is 1/2 inch, 5/8 inch, 5/8 inch, and 1/2 inch. To find the top of the pattern, locate the midpoint between any two holes that are spaced half an inch apart. Figure 2 shows the universal mounting hole pattern.

Downloaded from www.Manualslib.com manuals search engine

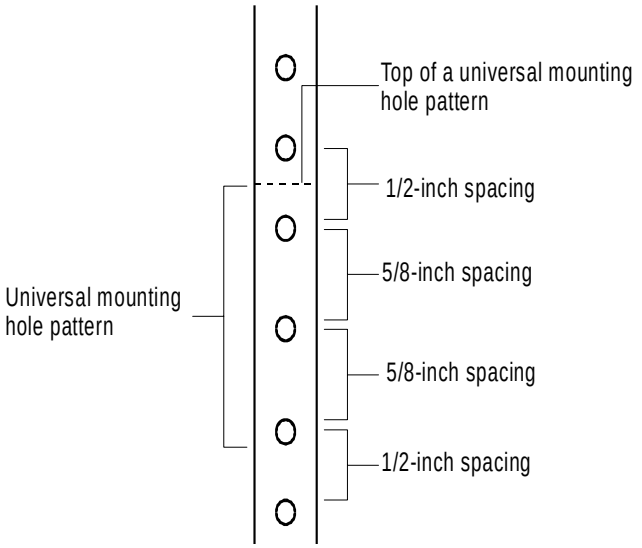


Figure 2 Universal Mounting Hole Pattern

4. From the top of the universal mounting hole pattern, insert "G" clips in the holes designated for the unit model.
5. Repeat steps 3 and 4 for the right rail. Ensure that you start on the same hole space.

You are now ready to mount the CoreBuilder 7000 family ATM switch into the distribution rack.

Downloaded from www.Manualslib.com manuals search engine

Mounting the CoreBuilder 7000 Family ATM Switch

Once the distribution rack is ready, you can mount the CoreBuilder 7000 family ATM switch into the rack.

To mount the CoreBuilder 7000 family ATM switch into the distribution rack:

1. Carefully lift the CoreBuilder 7000 family ATM switch into place, aligning the mounting brackets to the holes you have designated for mounting.

A fully-configured CoreBuilder 7000 family ATM switch weighs 43 pounds as shipped. To avoid personal injury, do not lift the unit without assistance.

2. While holding the CoreBuilder 7000 family ATM switch in place, firmly insert the mounting screws (10/32 x 1/2 Phillips) into the mounting holes on both sides of the rack.

The unit is now installed in the distribution rack.

To insert the power supply, switching modules, and interface cards, configure optical ports for the interface modules and connect network cabling and power to the unit see Chapter 4.

Downloaded from www.Manualslib.com manuals search engine

4 INSTALLING AND CONNECTING COREBUILDER MODULES

This chapter describes how to install and replace the CoreBuilder® 7000 family modules. The following modules are covered.

- Power Supply Module
- Switch Module
- 4-Port Interface Module
- Fan Tray
- Connecting to Network Devices

The installation procedures of the other modules of the CoreBuilder 7000 family modules are described in their respective guides.

This chapter also describes how to connect the CoreBuilder 7000 family ATM switch to network devices.

Safety Precautions

When handling replacement parts, 3Com recommends that you always use a wrist strap connected to a proper ground. This helps prevent the module from being damaged by electrostatic discharge. Additionally, when not in use, the module should be stored in an antistatic bag.

If the system is powered on when you are replacing a module, do not insert any metal objects, such as a screwdriver or a finger with jewelry, in the open slot. This could cause burns or other bodily harm, as well as system damage.

Downloaded from www.Manualslib.com manuals search engine

Vorsichtsmaßnahmen

Wenn Sie Ersatzteile handhaben, benutzen Sie immer ein Band am Handgelenk, daß gut geerdet ist. Das hilft vermeiden, daß das Ersatzteil durch elektrostatische Entladung beschädigt wird. Darüber hinaus sollte ein Modul, wenn nicht benutzt, in einem antistatischen Beutel aufbewahrt werden.

Steht das System unter Strom, wenn sie ein Modul installieren oder auswechseln, führen Sie keine Metallgegenstände, wie einen Schraubenzieher oder einen Finger mit Schmuck in den offenen Schlitz ein. Das könnte zu Verbrennungen oder anderen Körperschäden führen, sowie auch zu Schäden am System.

Mesures de sécurité

Lors de la manipulation des pièces de rechange, 3Com recommande de toujours utiliser une bande attachée au poignet et reliée à la terre. Cela aidera à éviter que la pièce ne soit endommagée par une décharge électrostatique. De plus, lorsqu'il n'est pas utilisé, le module doit être conservé dans un emballage antistatique.

Si le système est alimenté lors de l'installation ou du remplacement d'un module, ne jamais insérer d'objet métallique tel qu'un tourne-vis ou un doigt portant un bijou dans la fente. Cela est susceptible de provoquer brûlures ou autres dommages corporels, et d'endommager le système.

Power Supply Module

The CoreBuilder 7000 family ATM switch provides a dual load-sharing power supply capability where the second unit can serve as a redundant power supply. For more information, see "Redundant Power Supply" on page 85.

For certain combinations of installed interface cards, the second power supply cannot be used as a redundant supply (see "Providing Redundancy for Various Power Loads" on page 90).

This section discusses the following topics:

- Installing a Power Supply Module
- Replacing a Redundant Power Supply Module

Downloaded from www.Manualslib.com manuals search engine

Installing a Power Supply Module

To install a power supply module:

1. Orient the module so that its sides enter the guides on either side of the chassis slot.
2. Slide the module into the chassis until the face panel is flush with the enclosure.
3. Secure the screws on either side of the front panel.
4. If a redundant power supply is not installed in the second power supply slot, cover the slot with a blank panel for safety.

Replacing a Redundant Power Supply Module

You can replace the redundant power supply without having to turn off the system (hot-swap). For more information on the operation of the redundant power supply module, see "Redundant Power Supply" on page 85.

To replace a redundant power supply module:

1. Disconnect the power cord from the power supply.
2. Loosen the screws at the extreme right and left of the power supply, near the handles (see Figure 3).
3. Grasp the handles of the redundant power supply you want to replace and pull them outward. This ejects the power supply.
4. Remove the new power supply from its antistatic bag. Place the old power supply in the antistatic bag and set it aside in a safe place.
5. Orient the power supply so its labelling is upright.
6. Insert the power supply into the chassis by placing it between the guides of the slot and sliding it until it stops.
7. Tighten the power supply's securing screws.
8. Connect the power cord to the power supply.

Downloaded from www.Manualslib.com manuals search engine

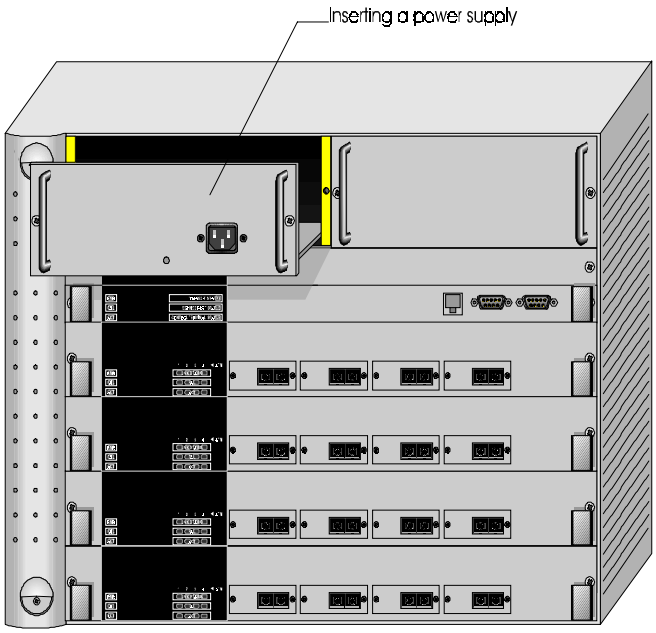


Figure 3 Hot-Swapping a Redundant Power Supply

Switch Module

The CoreBuilder 7000 family ATM switch provides for a redundant switch module to ensure continued operation should the main switch module fail. For more information on the operation of the redundant switch module, see Chapter 10 in the Operations Guide.

This section includes the following topics:

- Installing a Switch Module
- Replacing a Switch Module
- Setting up Switch Module Redundancy
- Setting up Switch Module Hardware Redundancy
- Setting up Hardware Redundancy and LANE Redundancy

Installing a Switch Module

To install a switch module in the CoreBuilder 7000 family ATM switch chassis:

1. Remove the new card from its antistatic bag.
2. Orient the card so its labelling is upright and make sure the inject handles are in the outward position.

Downloaded from www.Manualslib.com manuals search engine

3 Insert the card into the chassis by placing it between the guides of the selected slot and sliding the card until it stops.

4 Grab both inject handles and push them inward. This locks the card into the chassis. You may have to apply considerable pressure to the handles. An audible "click" indicates that the connectors have engaged.

5 Tighten the card's securing screws. You are now ready to connect cables to the appropriate ports.

Replacing a Switch Module

To hot-swap the switch module:

1 Disconnect the cables from the card's ports. Ensure that there is a record of where the cables are attached so that you can correctly re-connect them to the new card.

2 Loosen the screws at the extreme right and left of the card, near the insert/eject handles.

3 Grasp the insert/eject handles of the card you want to replace and push them outward. This ejects the card. You may have to apply considerable force to the handles. You will hear a "click" to indicate that the connections have separated, and the card will slide slightly forward out of the CoreBuilder chassis.

4 Remove the new card from its antistatic bag. Place the old card in the antistatic bag and set it aside in a safe place.

5 Orient the card so its labelling is upright and make sure the inject handles are in the outward position.

6 Insert the card into the chassis by placing it between the guides of the selected slot and sliding the card until it stops.

7 Grab both inject handles and push them inward. This locks the card into the chassis. You may have to apply considerable pressure to the handles. An audible "click" indicates that the connectors have engaged. Verify that the card has been properly installed by observing its LEDs.

8 Tighten the card's securing screws.

9 Connect cables to the appropriate ports.

Downloaded from www.Manualslib.com manuals search engine

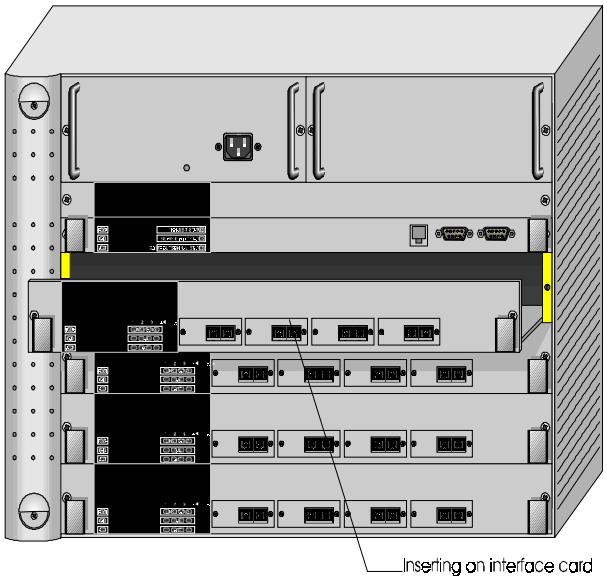


Figure 4 Hot-Swapping a Switch Module or Interface Module

Setting up Switch Module Redundancy

This section describes procedures for installing and setting up both a main and redundant switch module together.

Two different setup procedures are described. The first procedure covers setting up the main and redundant switch module *hardware redundancy* without setting up LANE redundancy. This procedure only requires operating the LMA. The second procedure sets up the main and redundant switch module hardware redundancy as well as LANE redundancy. It requires both the LMA and the Transcend Enterprise Manager.

There are two situations where you would use the procedures of this section:

1. The initial installation of main and redundant cards.
2. The main card in the first slot has failed and the redundant card in the second slot has taken over as the main card. The failed card in the first slot has been replaced by a new card and this new card is now the redundant one.

Downloaded from www.Manualslib.com manuals search engine

Setting up Switch Module Hardware Redundancy

Use the following procedure to set up the switch module hardware redundancy.

1. Designate and mark the main and redundant switch modules.
2. Insert the switch module you marked as "redundant" in slot 2. Do not insert the switch module you marked as "main" yet.
3. Turn on the CoreBuilder 7000 family ATM switch.

   The switch module in slot 2 becomes active.
4. Run the Integrated Fast Setup procedure (see "Integrated Fast Setup" on page 56.) using the LMA command
   `(9) FST`
5. Insert the main switch module in slot 1.
6. Reboot the CoreBuilder 7000 family ATM switch using the LMA menu sequence:
   `(1) SYS / (7) RBO`.

   The switch module in slot 1 becomes active.
7. Verify main and redundant switch module status using the LMA command:
   `(1) SYS / (4) SWM`

   You should see the following display.

```
Slot id    Slot status    Switch type          Switch mode    Memory size
        -------    -----------    ---------------    ------------   -----------

     1       Occupied    16x16 ATM switch    Active         8M
     2       Occupied    16x16 ATM switch    Redundant      8M
```

8. Run the Integrated Fast Setup procedure using the LMA command `(9) FST` to verify the configuration in the main switch module.

   The switch is now operational.

Setting up Hardware Redundancy and LANE Redundancy

This section presents a procedure for setting up both switch module hardware redundancy and LANE redundancy in the same session. Both the LMA and the Transcend Enterprise Manager are used.

Downloaded from www.Manualslib.com manuals search engine

General Description of the Procedure

The following is a general description of the procedure for orientation purposes only. When you perform the procedure, use the detailed steps in the following sections.

1. Install both switches in chassis and run CFGFRMAT.BAT on each one. Connect Ethernet ports of each switch module and install at least one interface card in the chassis.
2. Configure the first switch using the Integrated Fast Setup of the LMA and do not reboot the switch in the Integrated Fast Setup.
3. Reboot the switch after one minute using the LMA menu.
4. Answer "no" to the prompt "Erase the setup parameters?" and use the LMA to check that all configuration parameters (i.e., database, IP, NNI etc.) have passed successfully to the second switch module.
5. Configure LANE redundancy in the first switch using the Transcend Backbone and Services Setup window and close the window when finished.
6. Reboot the switch after one minute
7. Configure LANE redundancy in the second switch module using the Transcend Backbone and Services Setup window and close the window when finished.
8. After one minute use the MIB browser to check the LECS order list and the Backbone and Services Setup window to check the LECS database.
9. Reboot the box.
10. Check the second switch using the MIB browser to check the LECS order list and the Backbone and Services Setup window to check the LECS database.

Preparatory Steps

Carry out the following preparatory steps.

1. Install main and redundant switch modules in the switch module slot 1 and slot 2 respectively (see"Installing a Switch Module" on page 32). Do not run the Integrated Fast Setup yet.

Each time the switch is rebooted during this procedure the cards change roles. The main card becomes the redundant card and vice versa. The main card can always be identified by its ACT LED flashing once every two seconds. The ACT LED of the redundant card flashes at a lower rate.

Downloaded from www.Manualslib.com manuals search engine

2 Verify that at least one interface card of any type is installed in the CoreBuilder chassis in any interface card slots 3-6. Data is transferred between switch modules via a communications chip on an interface card.

3 Verify that the Ethernet management ports in both switches are connected to the NMS station. They can either be connected through a hub to the NMS station or through an Ethernet interface card in the same chassis, such as the CoreBuilder 7400 High Density Ethernet/ATM interface card, to the NMS station.

During the procedure you will need to verify connectivity between the NMS station and the switch by pinging the switch module from the NMS station.

Connectivity between the switch module and its attached devices is established by a coldStart trap transmitted by the switch module when it boots. The coldStart trap causes a device to learn the MAC address of the switch module. However, there are certain devices, for example, a Solaris station, which will not learn a new MAC address for an IP when one already exists. If you are using one of these devices as an NMS station, and you are unable to ping the switch module, try erasing the switch module's MAC address from the device's ARP table and ping again.

4 Verify that the RS-232 terminal line is connected to the console port on the main switch module.

Procedure Execution

1 Reset the configuration of both switch modules by executing the CFGFRMAT.BAT file supplied with your software.

To execute the CFGFRMAT.BAT file proceed as follows:

a Perform the LMA command (1) SYS / (3) LOA / (3) LCL / 1 to put the system in Load Mode: Load.

b Reboot the switch using the LMA menu command: (1) SYS / (7) RBO. The switch will reboot in debug mode.

c Transfer the RS-232 cable to the service port of the main switch module.

d From a DOS window on the LMA terminal execute
> **`cfgfrmat com speed`**

where "com" is the communications port you are using and "speed" is 115200 for a CoreBuilder 7000HD switch module and 57600 for a CoreBuilder 7000 switch module.

Downloaded from www.Manualslib.com manuals search engine

e Transfer the RS-232 cable to the service port of the redundant switch module.

f Repeat step d)

g Transfer the RS-232 cable to the console port of the main switch module.

Hardware Redundancy Setup

2 Set up the main switch module using the Integrated Fast Setup (see "Integrated Fast Setup" on page 56). Do not reboot the switch from the Integrated Fast Setup procedure (answer "no" to the prompt).

The main menu appears.

3 Wait for one minute to allow the configuration data to transfer from the main switch module to the redundant switch module.

4 Reboot the switch using the LMA menu sequence: (1) SYS / (7) RBO. This causes the configuration data to be recorded in flash memory and also causes the redundant switch module to become the main switch module.

5 After the switch reboots, answer "no" to the prompt: "Do you wish to erase the setup parameters".

6 Run the Integrated Fast Setup procedure as in step 2) to verify that the setup parameters have been transferred correctly to the second switch (the Integrated Fast Setup procedure now displays the setup parameters resident in the second switch module). Press Enter repeatedly to verify these parameters; do not enter new values.

7 Verify that the ELAN names in the LECS database are identical in both switch modules. Use menu item (2) LEM/(1) LCS/(5) LNT to check that the LECS database of the second switch includes the ELAN name of the first switch. For example, Elan6666_0 - Elan6666_15

NMS-Based LANE Redundancy Setup

8 Verify connectivity between the switch module and the NMS station by pinging the switch module from the NMS station.

9 Load the Transcend application and open the Wizard Tool from the ATMvLAN tool bar

10 Open the Backbone and Services Window.

11 Configure the LECS order as desired and press the Apply button.

12 Configure the LECS database. Add all the primary and redundant ELAN names desired to the LECS database and press Apply. Make a list of the

Downloaded from www.Manualslib.com manuals search engine

ELAN names you have selected. You will need them for setting up the other switch module.

13 When finished, close the Backbone and Services window.

14 Wait one minute to allow the LECS order database to transfer to the other switch module.

The LECS ELAN database does not transfer automatically.

15 Reboot the switch using the LMA menu sequence: `(1) SYS / (7) RBO`. The purpose of this step is to make the first switch module active in order to set up the LANE services there.

16 After the first switch boots, check its connectivity with the NMS station as in step 8).

17 Perform steps 10) and 12) using the same list of ELANs.

18 Wait one minute.

Verifying LANE Redundancy Setup

19 Use the MIB browser under the Transcend tools menu and browse through the MIB to verify that all the information regarding the LECS order list has been transferred correctly.

Look in the following MIB location:

- private
- enterprises
- atmForum
- atmForumNetworkManagement
- atmLanEmulation
- elanMIB
- elanLecsGroup
- elanLecsConfGrou.
- lecsConfTablelecsConfEntry
- lecsAtmAddrSpec

Press start query. The LECS order list is displayed on the bottom window.

20 Close the Backbone and Services Select window.

21 Open the Backbone and Services Select window again and use it to check that the LECS database is correct.

Downloaded from www.Manualslib.com manuals search engine

This item could be done through the LMA but it is preferred to do so through the NMS since the LMA will not show any redundant LES that exists.

22 Reboot the switch using the LMA menu sequence: (1) SYS / (7) RBO. The purpose of this step is to make the second card active in order to check the LANE services there.

23 After the second switch module boots, verify connectivity with the NMS station as in step 8).

24 Perform step 19) and 20) to verify LECS order.

25 Open the Backbone and Services Select window again and use it to check the LECS database is correct.

The hardware and LANE redundancy procedure is finished.

Downloaded from www.Manualslib.com manuals search engine

4-Port Interface Module

This section contains the following topics:

- ATM Interface Daughter Cards
- Installing the ATM Interface Daughter Cards
- Installing a 4-Port Interface Module
- Replacing a 4-Port Interface Module

ATM Interface Daughter Cards

Each of the four ATM interface receptacles of the 4-Port ATM Interface module can be configured to support the following types of ATM daughter cards:

- OC-3 multi-mode (MM) fiber link, single-mode (SM) fiber link
- DS-3 coaxial cable
- E-3 ATM 34.368 Mbits/sec WAN interface

Figure 5 shows the OC-3 daughter card.

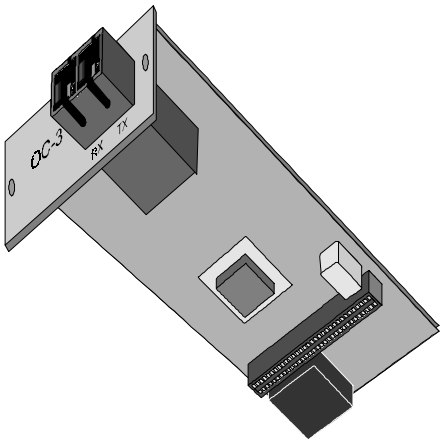


Figure 5 OC-3 Daughter Card

Figure 6 shows the DS-3 daughter card.

Downloaded from www.Manualslib.com manuals search engine

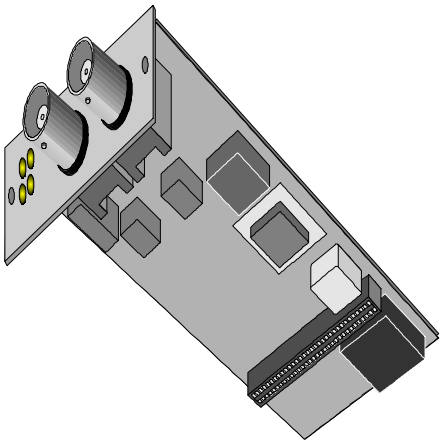


Figure 6 DS-3 Daughter Card

Figure 7 shows the E-3 daughter card.

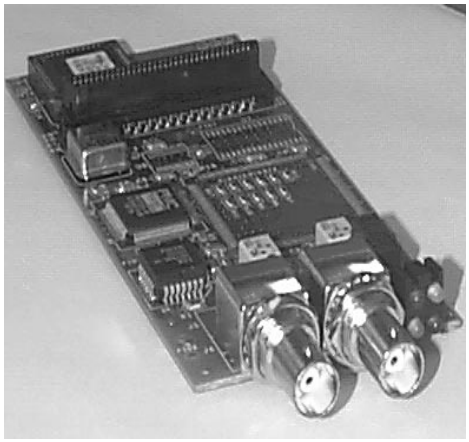


Figure 7 E-3 Daughter Card

Downloaded from www.Manualslib.com manuals search engine

Installing the ATM Interface Daughter Cards

The 4-port ATM interface module can hold up to four ATM interface daughter cards. The installation procedure of the 4-port ATM interface module comprises two stages. First, you install the ATM interface daughter cards in the 4-port ATM interface module. Then, you install the 4-port ATM interface module into the CoreBuilder 7000 family ATM switch chassis.

To install the ATM interface daughter cards perform the following procedure:

1. Select the individual daughter cards that are to occupy the interface card's four openings.
2. Align each module with the front panel aperture as shown in Figure 8 and press down to engage the strip connectors on the underside of the module. Three screws anchor each module to its seat on the interface card. Interface openings reserved for future use should be covered with blank panels. Used interfaces should use the coax or optical panels as covers.

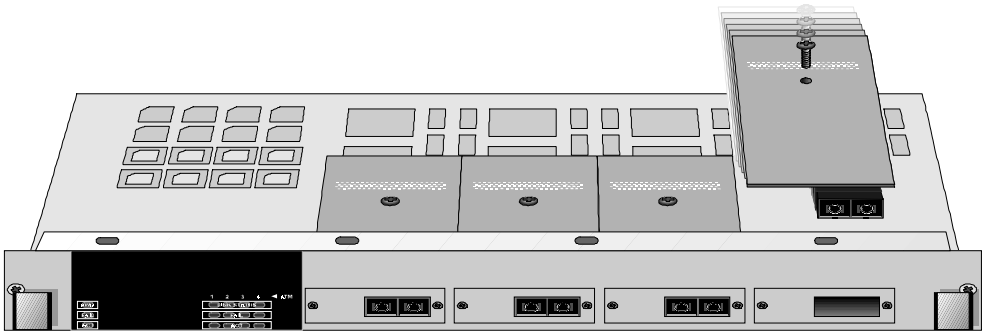


Figure 8 4-Port ATM Interface Module

Installing a 4-Port Interface Module

When the ports of the interface module have been fitted with the appropriate daughter card, you install the 4-port interface module into the CoreBuilder 7000 family ATM switch chassis.

To install the 4-port interface module:

1. Orient the interface module so its labelling is upright and be certain that the inject handles are in the outward position.
2. Insert the card into the chassis by placing it between the guides of the selected slot and sliding the card until it stops.
3. Be certain that the card sits in the guide slots on either side. Be sure that the loose screws do not interfere with card insertion.

Downloaded from www.Manualslib.com manuals search engine

4 Grab both inject handles and push them inward. This locks the card into the chassis. You may have to apply considerable pressure to the handles. An audible "click" indicates that the connectors have engaged.

5 Tighten the card's securing screws. You are now ready to connect cables to the appropriate ports of the module.

Replacing a 4-Port Interface Module

To replace individual daughter cards, or to replace the entire interface module:

1 Disconnect the cables from the card's ports. Ensure that there is a record of where the cables are attached so that you can correctly re-connect them to the new card.

2 Loosen the screws at the extreme right and left of the card, near the insert/eject handles.

3 Grasp the insert/eject handles of the card you want to replace and push them outward. This ejects the card. You may have to apply considerable force to the handles. You will hear a "click" to indicate that the connections have separated, and the card will slide slightly forward out of the CoreBuilder chassis.

4 If you are replacing the entire interface card, remove the new card from its anti-static bag. Place the old card in the anti-static bag and set it aside in a safe place.

Fan Tray

To replace the fan tray:

1 Loosen the screws at the top and bottom of the fan tray.

2 Pull the fan tray out of the chassis.

3 Remove the new fan tray from its antistatic bag. Place the old fan tray in the antistatic bag and set it aside in a safe place.

4 Orient the fan tray so its labelling is upright.

5 Insert the new fan tray into the chassis by placing it between the guides of the slot and sliding it until it stops.

6 Tighten the fan tray's securing screws.

Connecting to Network Devices

This section describes how to connect the CoreBuilder 7000 family ATM switch to different types of network devices.

Downloaded from www.Manualslib.com manuals search engine

Four types of connections are required:

- Connecting to an ATM Optical Interface
- Connecting the Control Terminal
- Connecting to the Ethernet Port
- Connecting to the Power Source

Connecting to an ATM Optical Interface

To connect a CoreBuilder 7000 family ATM switch port to another CoreBuilder unit, to a LinkSwitch 2700 ATMLink adapter, or to any device with an ATM optical interface:

1. Prepare an optical cable (Tx Rx). You may want to mark the ends of the cable so you can identify them.
2. Snap the cable into a CoreBuilder 7000 family ATM switch port in one of the interface modules.
3. Snap the other end of the cable into the selected optical interface of the other ATM device. Make sure that each wire connects to Rx on one end and Tx on the other.
4. Repeat steps 1-3 for all ATM port connections to the CoreBuilder.

Perform steps 1-4 above when connecting a DS-3 coax cable set (Rx and Tx).

Fiber Optic Power Budget of 3Com Products

Table 8 shows the power budget of various 3Com products. Use this table when you calculate the length of fiber optic cable you need to connect to the CoreBuilder 7000 family ATM switch. See fiber optic cable manufacturers data for more information.

Table 8 Power Budget for Various 3Com Products

Product	Mode (nm)	Min TX. O-Pwr (dBM)	Receiver Sens. (dBM)	Budget (dB)	Distance (KM)	Specification
4-Port/8-Port OC-3 MM	MM-1300	-19	-30	11	2	HP#:HFBR-5205
4-Port/8-Port OC-3 SM	SM-1300	-15	-33	18	15	SDX-1155B
CoreBuilder 7201 (ATM port)	MM-1300	-19	-30	11	2	HP#:HFBR-5205

Downloaded from www.Manualslib.com manuals search engine

Table 8 Power Budget for Various 3Com Products (continued)

Product	Mode (nm)	Min TX. O-Pwr (dBM)	Receiver Sens. (dBM)	Budget (dB)	Distance (KM)	Specification
CoreBuilder 7201 (ATM port)	SM-1300	-15	-33	18	15	SDX-1155B
CoreBuilder 7200F - Ethernet	MM-820	-7.6	-15.1	7.5		HP#:HFBR-2416TC HP#:HFBR-1414T
CoreBuilder 7200F - Ethernet	SM	N/A				
CoreBuilder 7600FX	MM-1300	-19	-31	12		HP#:HFBR-5103
CoreBuilder 7600FX	SM	N/A				
OC-12	MM-1300	-19	-26	7	0.8	HP#:HFBR-5208
OC-12	SM	-15	-28	13	15	HP#:SDX-1622

Connecting the Control Terminal

The CoreBuilder 7000 family ATM switch can be configured via the LMA using the Administration Console terminal (VT100) or terminal emulator (Windows).

To connect a terminal to the CoreBuilder 7000 family ATM switch control port:

1. Prepare an RS-232 shielded cable (9 pin-to-9 pin or 9 pin-to-25 pin, as dictated by the terminal you wish to use).
2. Configure the terminal: 19200 baud, 8 data bits, 1 stop bit, no parity, xon/xoff flow control.
3. Push the DCE side of the cable onto the Control port of the switch module and screw it into place.
4. Connect the other end of the cable to the terminal.

In case you have installed a redundant switch unit, it is sufficient to connect the RS-232 line to either the active switch control port or to the redundant switch control port.

Connecting to the Ethernet Port

The Ethernet port is used for connecting directly to a Transcend Network Management System terminal for management purposes.

Downloaded from www.Manualslib.com manuals search engine

In case you have installed a redundant switch module, its Ethernet port must also be connected directly to the Transcend NMS terminal.

Another way of connecting the Ethernet port to an out-of-band Ethernet network is to connect it to a CoreBuilder 7200 Ethernet/ATM Interface Card or a CB7400 High Density Ethernet/ATM Interface Card installed in the same chassis.

Connecting to the Power Source

This section describes how to connect the CoreBuilder 7000 family ATM switch to the power source.

Selecting a Power Cord

The following power cords and accessories are supplied with the unit:

- 1 or 2 power cord(s) (2.5 meters each)
- 1 strain relief bracket per power cord
- 3 screws, M3 x 8 Phillips

The power cord supplied with the unit can be used with loads of up to 5 Amps AC.

If power cord(s) WERE NOT supplied with the unit, choose a cord based on the following information:

- For units installed in the USA or Canada: Select a flexible, three-conductor power cord that is UL-listed and CSA-certified, with individual conductor wire size of #18 AWG, and with a maximum length of 4.5 meters. The power cord terminations should be NEMA Type 5-15P (three-prong earthing) at one end and IEC appliance inlet coupler at the other end.
- The following types are acceptable: SV, SVE, SVO, SVT, SVTO, SVTOO, S, SE, SO, SOO, ST, STO, STOO, SJ, SJE, SJO, SJOO, SJT, SJTOO, SP-3, SPE-3, SPT-3, G, W.
- For units installed in all other countries, select only a flexible, three-conductor power cord, approved by the cognizant safety organization of your country. The power cord must be of the type HAR (Harmonized), with an individual conductor wire size of 0.75 sq.mm. The power cord terminations should be a suitably-rated earthing-type plug at one end and an IEC appliance inlet coupler at the other end. Both of the power cord terminations must carry the certification label (mark) of the cognizant safety organization of your country.

Downloaded from www.Manualslib.com manuals search engine

Plugging in the Unit

To plug in the unit:

1. Plug the power cord into the power source.
2. Plug the other end of the cord into the AC inlet located in the topmost section of the CoreBuilder 7000 family ATM switch front panel. Make sure the power cord is fully seated. A green power LED on the power supply should be lit. The unit is automatically powered up when the power cord is plugged in.
3. Be certain that the fans are working. If the fans are not working, unplug the unit immediately and see "Fans do not rotate" on page 94.

Downloaded from www.Manualslib.com manuals search engine

5 POWER-ON

This chapter describes the system states of the CoreBuilder® 7000 family ATM switch including power-on and some basic diagnostic information to help you verify normal operation of your CoreBuilder system.

This chapter describes the following topics:

- System States
- System Power-on
- 4-Port Interface Module LEDs

System States

This section describes the different system states of the 8-Port Board and how they are indicated on the LED display.

The system states are:

- Power-on
- Normal operation
- Hardware fault
- Software fault
- No power to unit

System States and Switching Module LEDs

LED indicators are located on the front panels of the CoreBuilder 7000, its power supply, switching modules, and interface modules. These LEDs indicate the current system state of the CoreBuilder unit and its components. Front panel LEDs can be extremely useful in determining the cause of specific problems.

The system state in which the CoreBuilder 7000 unit is currently operating is displayed by the switching module system status LEDs. Referring to Figure 9, these are the three LEDs: PWR, FAIL, and ACT(ive)

Downloaded from www.Manualslib.com manuals search engine

on the left side of the LED panel. Table 9 shows the correlation between the current system state and SYS LEDs display. For example, during normal operation the PWR LED is on, the FAIL LED is off and the ACT LED is flashing. The LEDs on the right side of the panel indicate the status of the Ethernet port, the Service port and the Control port.

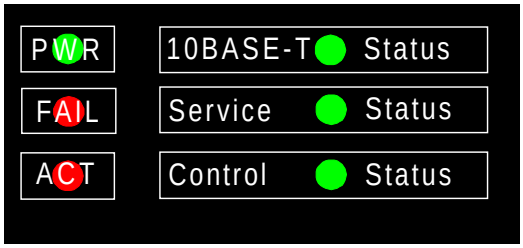


Figure 9 Switching Module LEDs

Table 9 CoreBuilder System States

System State	Power (green)	Fail (red)	Activity (yellow)	10BASE-T Status (green)	Service Port Status (green)	Control Terminal Status (green)
Power-on	On	Off	On	On	Flashing	Flashing
Normal operation	On	Off	Flashing	On	On	On
Hardware fault	On	On	Off	Off	Off	Off
Software fault	On	Off	Not flashing	Undetermined	Undetermined	Undetermined
No power to unit	Off	Off	Off	Off	Off	Off

The following table also provides information about the LED display of system states but is organized by system status LED.

Table 10 Description of Switching Module LEDs

LED	Color	Description	Source
PWR (Power)	Green	DC power input active.	Hardware
ACT (Activity)	Yellow	Should blink continuously when operational.	Software
FAIL	Red	CPU failure.	Hardware CPU or Watchdog
10BASE-T STATUS	Green	10BASE-T link OK. The Ethernet link is active.	Hardware Ethernet controller

Downloaded from www.Manualslib.com manuals search engine

Table 10 Description of Switching Module LEDs (continued)

SERVICE PORT STATUS	Green	RS232 service port link OK – should be blinking during power on.	Software
CONTROL TERMINAL STATUS	Green	RS232 control terminal port link OK – should be blinking during power on.	Software

System Power-on

This section describes the stages of system power-on of the CoreBuilder 7000 family ATM switch.

Software Loading and Diagnostics

Apply electrical power to the system by inserting the power cord in the power supply unit. The power supply indicator lights and the CoreBuilder 7000 family ATM switch automatically runs diagnostic software. This software verifies that every component in the system is fully functional before the system becomes active on the network. Diagnostics should take sixty seconds or less.

If any component fails power-on diagnostics, the system either fails to power on or it keeps faulty modules off-line. Once the system comes up, you can check to see which modules, if any, have failed diagnostics by checking the LED panels; in-depth information is available by viewing the system configuration screens on the administration console.

Indicators

All interface and switching unit indicators light at the start of the power-on diagnostic sequence, then go out briefly. General activity LEDs light up as the system checks the switching and interface modules. Finally, individual port indicators go on as the system discovers active connections residing on the interface modules. The 10BaseT indicator on the interface module is on during normal function, even if there is no active 10BaseT management link.

4-Port Interface Module LEDs

Figure 10 shows the 4-port interface module LEDs. Table 11 and Table 12 list the permanent 4-port interface module panel LEDs.

Downloaded from www.Manualslib.com manuals search engine

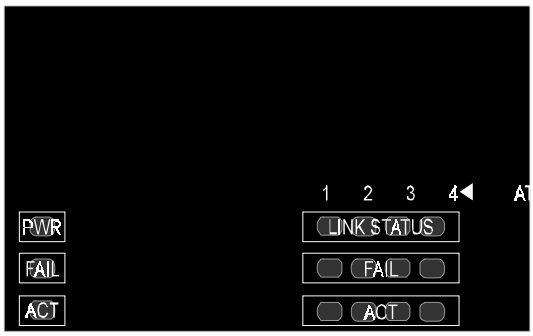


Figure 10 Interface Module LEDs

Table 11 Description of Interface Module LEDs

LED	Color	Description	Source
PWR (Power)	Green	DC power input active.	Hardware
FAIL	Red	CPU failure.	Hardware CPU or Watchdog
ACT (Activity)	Yellow	Should blink continuously when operational.	Software

Table 12 Description of Interface Module LEDs for Each Port

LED	Color	Description	Source
LINK STATUS	Green	ATM physical layer is connected and has no error.	Software
FAIL	Red	ATM interface port test failure.	Software
ACT (Activity)	Yellow	Reception and transmission of cells on ATM link – should flash to indicate traffic.	Software

DS-3 Status LEDs

The DS-3 status LEDs are found on the front panel of the DS-3 piggy. Table 13 lists the LEDs of the DS-3 piggy.

Downloaded from www.Manualslib.com manuals search engine

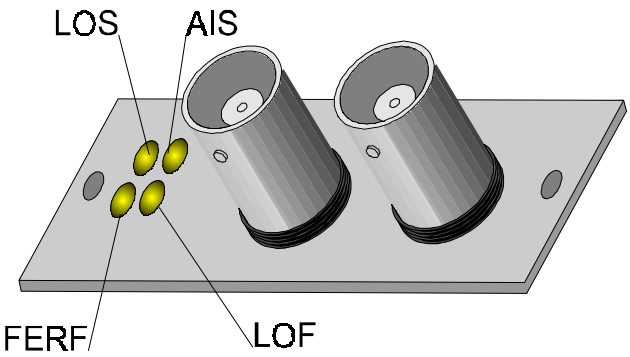


Figure 11 DS-3 Status LEDs

Table 13 DS-3 Status LEDs

LED	Color	Description
LOS Loss of Signal	Green	*On:* There is a signal on Rx (normal state). *Off:* No signal on Rx (problem with Rx).
FERF Far End Rx Failure Signal	Yellow	*On:* FERF in incoming frames (the peer reports about its Rx problem). *Off:* No FERF in incoming frame.
AIS Alarm Indication Signal	Blue	*On:* AIS signal is present for at least 5 sec. (the peer reports about its problem). *Off:* No AIS signal present for at least 5 sec. (normal state).
LOF Loss of Frame	Red	*On:* LOF is present for at least 5 sec. (problems with Rx). *Off:* No LOF for at least 15 sec.

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

6 CONFIGURING THE COREBUILDER 7000 FAMILY ATM SWITCH

This chapter describes the initial configuration of the CoreBuilder® 7000 family ATM switch. Using the terminal connected to the control port, you log into the system and assign network addresses to the CoreBuilder 7000 family ATM switch. This procedure enables the management of the site to recognize and communicate with the CoreBuilder 7000 family ATM switch. You also specify ATM connections between addresses, using the ATM protocol you have selected.

The topics covered in this chapter include:

- Logging in to the LMA
- Integrated Fast Setup
- Additional Switch Configuration
- Viewing Network Statistics.
- Storing and Retrieving Configuration Parameters
- Upgrading from E-IISP to PNNI

Logging in to the LMA

When you boot the CoreBuilder 7000 family ATM switch the following login screen appears:

```
------------------------------
-      CoreBuilder 7000       -
-                              -
-  ATM     Backbone    Switch -
------------------------------
Access level (read, write, admin):admin
Password:
```

Downloaded from www.Manualslib.com manuals search engine

To log in to the LMA:

1 Enter your access level (default is admin)

2 Enter your password

After a successful login the LMA Main Menu is displayed as shown in Figure 12.

```
   CB7000 switch module - Main Menu:
 ==========
(1) SYS: Platform config ->
(2) LEM: Lan Emulation ->
(3) CON: Connections ->
(4) STS: Statistics ->
(5) DIA: Testing & Diagnostics ->
(6) FTR: ATM features
(7) LOG: Logout
(8) VER: Version
(9) FST: Fast Setup
```

Figure 12 LMA Main Menu

Integrated Fast Setup

This section describes the Integrated Fast Setup procedure and contains the following topics:

- Setup Modes
- Setup Procedure Sections
- Entering Data
- Navigation Aids
- Integrated Fast Setup Operation

Use the Integrated Fast Setup procedure to configure the minimum set of parameters needed to enable the CoreBuilder 7000 family ATM switch and its attached devices to function in the network.

With this procedure you can configure both the CoreBuilder 7000 family ATM switch card and all CoreBuilder 7X00 interface cards installed in it in one session.

Downloaded from www.Manualslib.com manuals search engine

In certain cases you will need to use the Fast Setup procedure of individual CoreBuilder 7X00 interface cards, in addition to the Integrated Fast Setup procedure, to correctly configure your system.

This section presents the Integrated Fast Setup of the CoreBuilder 7000 family ATM switch card. It also explains when to use the Integrated Fast Setup of the CoreBuilder 7000 family ATM switch card and when to use the Fast Setup of an individual Corebuilder 7X00 interface card. For detailed information about how to use the Fast Setup of an individual Corebuilder 7X00 interface card, see the User Guide of the specific interface card.

Chassis-oriented Setup

The Integrated Fast Setup procedure is based on the concept that the CoreBuilder 7000 family ATM switch chassis together with its installed interface cards is viewed as an integrated unit. The advantage of this point of view is its simplicity: it is not necessary to remember in which slot each interface card is installed or even which type of interface card is installed. Attention is focussed on configuring the ports of the chassis. The procedure automatically determines the ports that are available in the chassis and presents them by type (Ethernet, Fast Ethernet, ATM) for configuration. The port location is displayed by the notation <slot.port>. For example <3.1> refers to slot #3, port #1.

Chassis-wide VLANs

With the Integrated Fast Setup, Virtual LANs (VLANs) can be created across the entire chassis. VLANs are set up in two stages. First, in the LE Client section, a number of *potential* VLANs are created according to the requirement of the network. Next, in the Virtual Network Configuration section, the potential VLANs become actual VLANs by having ports assigned to them.

You need to define an administration "admin" VLAN to maintain SNMP connectivity to each device in the network. Using the Integrated Fast Setup you define one admin VLAN for the chassis; there is no need to define separate admin VLANs for each interface card.

Note that from software version 3.5 on, the "admin" VLAN can now be called by any other name providing the same name is used consistently in the CB7000 and in all installed CB7X00 interface cards. When using the Integrated Fast Setup, the name for the admin VLAN which is specified for the switch module will be automatically chosen for the other modules

Downloaded from www.Manualslib.com manuals search engine

housed in the same CoreBuilder 7000 family ATM switch chassis, overriding any existing admin VLAN names.

Setup Modes

The Integrated Fast Setup provides two setup modes: the "Full" setup mode and the "Switch" setup mode.

Full Setup Mode

The Full setup mode configures both the CoreBuilder 7000 family ATM switch and the installed interface cards. It sets the required parameter values in all the installed interface cards. The Full setup mode presents only the most critical parameters; default values are assumed for the remaining parameters.

This method is recommended for most users, especially for initial setup.

Only those systems that require specific parameter settings in one or more of the installed interface cards will require the Switch setup mode described in the next section.

Switch Setup Mode

The Switch setup mode focuses only on the CoreBuilder 7000 family ATM switch and its ATM ports. The Switch setup mode allows you to retain special settings in the interface cards. In this mode, the installed interface card configurations cannot be changed. If you want to alter the settings in an interface card, use the Fast Setup of that interface card after you are finished using the Switch setup procedure.

Setup Mode Selection

If one of the following conditions is detected, the operator is prompted to choose between the Switch and Full setup modes:

- A Subnet Mask, Default Gateway or NMS Address different from that of the CoreBuilder 7000 family ATM switch
- A VLAN whose ATM connection is set to "No"
- The name of the ELAN to which the default admin port (Port #1 in each slot) is attached is not the same in all interface cards.

If none of these situations is detected, Full setup mode is automatically selected.

Downloaded from www.Manualslib.com manuals search engine

If Full setup is selected, the parameters in the interface cards revert to their default values.

Setting Special Parameters

If one or more individual interface cards requires one of the special situations referred to in the previous section or needs to remain unaltered, you need to do one of the following:

- Use the Switch setup mode of the Integrated Fast Setup to set up the CoreBuilder 7000 family ATM switch only and then use the Fast Setup of each installed interface card separately.
- Use the Full setup mode of the Integrated Fast Setup to configure the CoreBuilder 7000 family ATM switch and all installed interface cards and then use the Fast Setup for the particular interface card in order to restore its special parameter values.

Setup Procedure Sections

The Integrated Fast Setup procedure contains the following sections:

Table 14 Setup Procedure Sections

Setup Section	Description
1 Routing Mode	Set the Routing Protocol to be used
2 Network Prefix	Set Network Prefix for CoreBuilder 7000
3 PNNI Parameter	Set the PNNI node level (for the PNNI protocol — Version 4.5 extended only)
4 LE Parameters	Set LE Parameters for CoreBuilder 7000 (LECS and LES states)
5 LECS Address	Set resident active LECS address for CoreBuilder 7000
6 FastBUS Configuration	Configure the FastBUS card if installed.
7 Interface Type	Set the interface type port parameters for CoreBuilder 7000
8 LE Client Configuration	Define potential VLANs by assigning names to ELANs. Exit this section by pressing Enter only.
9 Virtual Network Configuration	Assign chassis ports to potential VLANs.
10 Admin VN Management Configuration	Set up admin VLAN in all modules including setting IP address
11 Confirmation	Confirm setup

Downloaded from www.Manualslib.com manuals search engine

Entering Data

The Integrated Fast Setup procedure runs sequentially through the relevant data for all of the sections, displaying a prompt for each data item and a default value. If you want to change the default, enter the desired value in place of the default. If you want to accept the default, press Enter.

Default Parameter Values

The default parameter value displayed at the prompt is the value stored in flash memory. In case there is no value in flash memory, the factory default value is displayed.

Navigation Aids

Table 15 lists the short-cut characters you can use to move between sections of the Integrated Fast Setup procedure:

Table 15 Integrated Fast Setup Procedure Navigation Aids

Type:	To Go:
<	Back to previous section
>	To next section
>S	To section indicated by double-underlined identifier letter S in section title
\	Back to beginning of setup
$	To end of setup

Integrated Fast Setup Operation

You initiate the Integrated Fast Setup from the LMA Main Menu of the Corebuilder 7000 family ATM switch (see Figure 12).

To begin the Integrated Fast Setup process, select the menu item:
(9) FST: Fast Setup

Note that the Integrated Fast Setup "Full" setup mode may override any specific configurations that have previously been carried out in any of the installed interface cards (see "Setup Modes" on page 58). The following warning message is displayed when this is about to occur:

```
***Note: Full fast setup, special module configuration will
be overridden.
```

The following message appears on the screen.

Downloaded from www.Manualslib.com manuals search engine

```
Now reading the modules configuration, please wait ...


  Special module configuration will be overridden by fast setup.
  continue full fast setup or only switch fast setup  (S<witch>, F<ull>): F

 ***Note: Full fast setup, special module configuration will be overridden.


Fast Setup Utility
==================

The flash configuration will be displayed below;
Update if needed, and then hit Enter.

To move between sections, enter the following characters at end of line:
< >  -  Back and forth in sections     >S   -  Jump to section ID S
\    -  Back to beginning of setup     $    -  To end of setup

Only in Virtual Network Configuration section (group=slot; item=port):
}G   -  Jump to group #G               +I   -  Jump to item #I
*    -  Update all group items         **   -  Update all section items
.T   -  Assign a VLT tag #T
```

Routing Mode Section In this section you are prompted to select PNNI or E-IISP as the routing protocol to be used. Enter 1 for PNNI or 0 for E-IISP.

```
Routing mode
=-----------
Select routing mode (1-PNNI, 0- E-IISP) : 1
```

PNNI is available in version 4.5 extended only.

Network Prefix Section In this section you are prompted for the network prefix of the switch. Enter values as appropriate. The following example shows a typical network prefix setting.

Downloaded from www.Manualslib.com manuals search engine

```
Network Prefix
=-------------

Network Prefix(In HEX): 47.00.00.00.00.00.3c.00.00.a*
```

PNNI Parameter Section If PNNI was selected as the routing mode, in this section you are prompted to enter the PNNI node level, i.e., the hierarchy level of the peer group to which it the node belongs. Enter a value in the range 0 to 104.

```
PNNI Parameters
=--------------
Enter PNNI Node Level [0 to 104]: 72
```

LE Parameters Section In this section you are prompted to enable or disable the resident LECS and LES of the switch. Enter values as follows:

1 At the "Resident LECS state" prompt, enter **1** to enable the resident LECS or enter **0** to disable the resident LECS.

If you enter 1, the resident LES will be enabled automatically and no further prompt will be displayed. If you enter 0, the "LES state" prompt will be displayed.

2 At the "LES state" prompt, enter **1** to enable the resident LES or enter **0** to disable the resident LES.

The following example shows a typical LAN Emulation configuration.

```
LE parameters
=------------
  Resident LECS state (1-Enable, 0-Disable): 0
  LES state (1-Enable, 0-Disable): 1
```

LECS Address Section This section prompts you for the ATM address of the LECS. Enter the complete LECS address; the network prefix is identical to the network prefix of the switch. The following example shows a typical LECS Address configuration:

Downloaded from www.Manualslib.com manuals search engine

```
LECS Address
--=---------
Active LECS addr:47.00.00.00.00.00.3c.00.00.a0.00.00.00.00.a0.3e.00.00.01.00
```

In PNNI mode, this section is not relevant and an appropriate message is displayed.

FastBUS Configuration Section This section prompts you to configure the FastBUS module. If no FastBUS module is installed, this section is skipped by the Integrated Fast Setup.

To configure the FastBUS:

1. At the prompt, enter **`1`** to enable the FastBUS module or enter **`0`** to disable it.
2. At the prompt, enter a number in the range **`1-4`** to select the capacity of Bank 1 from the list of four possibilities:

   ```
   Options: 1-6*10MB/s
            2-3*20MB/s
            3-2*30MB/s
            4-1*60MB/s
   ```

   The factory default is 4.

   Your choice is displayed.
3. As in step 2, select the capacity of Bank 2.
4. For each of the 16 resident ELANs, enter a number in the range **`0-2`** to select the bank assignment for the ELAN from the list of three possibilities:

   ```
   Options: 0 - Conventional
            1 - Bank 1 (1*60MB/s)
            2 - Bank 2 (1*60MB/s)
   ```

   The factory default is 0.

   Your choices are displayed.

The following is an example of the FastBUS configuration.

Downloaded from www.Manualslib.com manuals search engine

```
Fast BUS Configuration
=---------------------
  Fast BUS state (1-Enable, 0-Disable): 0 1

2 FastBUS banks available. Select bank's capacity:
Options: 1-6*10MB/s
         2-3*20MB/s
         3-2*30MB/s
         4-1*60MB/s
Bank 1, slot 4: 4
Bank 1 is configured: (1*60MB/s)
Bank 2, slot 4: 4
Bank 2 is configured: (1*60MB/s)

Fast BUS: ELAN assignments
-----=--------------------
Options: 0 - Conventional,
         1 - Bank 1 (1*60MB/s)
         2 - Bank 2 (1*60MB/s)
elan7674_0: 0
...
elan7674_15: 0
-------------------------------------------------------------
|ELAN ID |ELAN Name                        |Capacity     |
|--------|---------------------------------|-------------|
| 1      |elan7674_0                       |Conventional |
| 2      |elan7674_1                       |Conventional |
| 3      |elan7674_2                       |Conventional |
| 4      |elan7674_3                       |Conventional |
| 5      |elan7674_4                       |Conventional |
| 6      |elan7674_5                       |Conventional |
| 7      |elan7674_6                       |Conventional |
| 8      |elan7674_7                       |Conventional |
| 9      |elan7674_8                       |Conventional |
| 10     |elan7674_9                       |Conventional |
| 11     |elan7674_10                      |Conventional |
| 12     |elan7674_11                      |Conventional |
| 13     |elan7674_12                      |Conventional |
| 14     |elan7674_13                      |Conventional |
| 15     |elan7674_14                      |Conventional |
```

Downloaded from www.Manualslib.com manuals search engine

Interface Type Section This section prompts you for the ATM interface type configuration of the ports on the Interface Modules which are installed in the CoreBuilder 7000 family ATM switch chassis.

There are four interface types: UNI, E-IISP, IISP and PNNI. The UNI type is normally used when an edge device is connecting to a switch. The E-IISP type is normally used when connecting to another CoreBuilder 7000 or 9000 switch. The IISP type is used to connect to a device which does not recognize the E-IISP protocol used by the CoreBuilder 7000 family ATM switch such as switches of other vendors. The PNNI type is normally used to connect switches to other similar or different types of switches when you want each switch to have a global view of the entire network.

PNNI is available in version 4.5 extended only.

To enter the interface type configuration:

1. At the NNI type of port prompt, enter the NNI type for the port you just specified. Enter "U" for UNI, enter "E" for E-IISP, enter "I" for IISP, or "P" for PNNI.
2. Repeat step 1 until you have specified the interface type for all of the ports that are in the Corebuilder 7000 family ATM switch chassis.

```
Interface type
=-------------
 NNI type of port <3.1> (U<NI>, E<IISP>, I<ISP>, P<NNI>): U
 NNI type of port <3.2> (U<NI>, E<IISP>, I<ISP>, P<NNI>): P
 NNI type of port <3.3> (U<NI>, E<IISP>, I<ISP>, P<NNI>): E
 NNI type of port <3.4> (U<NI>, E<IISP>, I<ISP>, P<NNI>): I
```

Downloaded from www.Manualslib.com manuals search engine

3 The LMA automatically prompts you to enter ATM addresses for the ports that you have specified as IISP. These are ATM addresses of network devices that you want the IISP port to recognize for routing purposes. They are placed in the routing table of the port. You need to enter these addresses manually because the IISP protocol does not automatically recognize them. You can enter more than one address; press Enter to end the sequence of addresses.

```
*** The following are addresses of ports you have defined as IISP.
    You may enter more than one address per port.
    When you have finished press <Enter>:
  ATM address for port <5.2> (19 bytes-When less: end with '.*'):
  47.00.00.00.00.00.3e.00.00.b0.00.c0.da.69.00.c0.da.11.22
ATM address was set for port <5.2>
  ATM address for port <5.2> (19 bytes-When less: end with '.*'):
  47.00.00.00.00.00.3e.00.00.b0.00.00.00.00.c0.da.11.22.00
ATM address was set for port <5.2>
  ATM address for port <5.2> (19 bytes-When less: end with '.*'):
```

4 The LMA automatically prompts you for the NNI type of the ports that you have specified as IISP. Specify the NNI type as User or Network.

```
*** The following is a profile of ports you have defined as Gateway:
  Profile of port <5.2> (U<ser>, N<etwork>): N
```

5 Repeat until you have specified all the IISP ports.

LE Client Configuration Section This section prompts you for the LAN Emulation Client configuration. You give names to the ELANs that you want to be active in the network. In the Virtual Network Configuration section, you will assign Ethernet ports to the ELANs you have named in this section to create VLANs. Until then, the ELANs are considered *potential* ELANs.

You can enter the names of resident ELANs of the switch you are setting up and you can enter names of ELANs from other devices in the network. You can define any number of potential ELANs. To end the sequence, press Enter.

The names of the ELANs resident on a particular switch all have the form elanXXXX_n where "XXXX" is a number unique to the switch and "n" is

Downloaded from www.Manualslib.com manuals search engine

the sequential number of the ELAN. This is the form you need to use for ELANs that you enter in this section (except for the admin ELAN).

You are first prompted for the name of the admin VLAN. The default name displayed is the name of the admin VLAN of the CoreBuilder 7X00 which is installed in the highest occupied slot in the CoreBuilder chassis. You can change it if you wish.

The name for the admin VLAN which is specified in this section will be automatically chosen for the other modules housed in the same CoreBuilder 7000 family ATM switch chassis, overriding any existing admin VLAN names.

For this section and the Virtual Network Configuration section to operate correctly, at least one CoreBuilder 7X00 interface card must be installed in the CoreBuilder 7000 family ATM switch chassis.

The following shows a typical LE Client Configuration. Make a list of the ELAN names and the numbers to which they are assigned in this section for later use in the Virtual Network Configuration section.

Downloaded from www.Manualslib.com manuals search engine

```
  LE Client Configuration
  -=---------------------
*** Hit Enter after VN #2 for end of potential ELAN names list.

 VN #1 ELAN Name: admin
 VN #2 ELAN Name: elan8460_1
 VN #3 ELAN Name: elan67791 _5
 VN #4 ELAN Name: elan1234_5
 VN #5 ELAN Name: elan1234_6
 VN #6 ELAN Name: elan1234_7
 VN #7 ELAN Name: elan6789_0
 VN #8 ELAN Name: elan6789_1
 VN #9 ELAN Name: elan1357_1 0
 VN #10 ELAN Name: elan2468_1
 VN #11 ELAN Name: elan1111_1
 VN #12 ELAN Name: elan2222_2
 VN #13 ELAN Name: elan3333_3
 VN #14 ELAN Name: elan4444_4
 VN #15 ELAN Name: elan5555_5
 VN #16 ELAN Name: elan6666_6
 VN #17 ELAN Name: elan7777_7
 VN #18 ELAN Name:
```

Virtual Network Configuration Section This section prompts you for the virtual network configuration. In this section, you assign Ethernet ports to the ELANs you entered in the LE Client Configuration section. The Ethernet ports of the CoreBuilder 7X00 interface cards installed in the CoreBuilder 7000 family ATM switch chassis are displayed sequentially. For each port, you enter the number of the ELAN to which you want that port to belong. To end the sequence, press Enter.

At the end of the section, a list of the ELANs that were entered in the LE Client Configuration section but did not have ports assigned to them in this section is displayed.

Downloaded from www.Manualslib.com manuals search engine

Table 16 lists the short-cut characters you can use to move between sections of the Virtual Network Configuration procedure:

Table 16 Virtual Network Configuration Procedure Navigation Aids

Type:	To perform:
}G	Jump to group #G.
*	Update all group items.
+I	Jump to item #I
**	Update all section items.
.T	Assign a VLT tag #T

The following shows a typical virtual network configuration.

Downloaded from www.Manualslib.com manuals search engine

```
Virtual Network Configuration
=----------------------------
Fast Ethernet <4.1> belongs to VN # (1-17): 1  < Admin VN >
Fast Ethernet <4.2> belongs to VN # (1-17): 2
Fast Ethernet <4.3> belongs to VN # (1-17): 3
*** Note: A new VN has been created.
Fast Ethernet <4.4> belongs to VN # (1-17): 4
*** Note: A new VN has been created.
Fast Ethernet <4.5> belongs to VN # (1-17): 5
*** Note: A new VN has been created.
Fast Ethernet <4.6> belongs to VN # (1-17): 2
Fast Ethernet <4.7> belongs to VN # (1-17): 17
*** Note: A new VN has been created.
Fast Ethernet <4.8> belongs to VN # (1-17): 3
Fast Ethernet <4.9> belongs to VN # (1-17): 18
*** No such VN No.
Fast Ethernet <4.9> belongs to VN # (1-17): 7
*** Note: A new VN has been created.
Fast Ethernet <4.10> belongs to VN # (1-17): 2 8
*** Note: A new VN has been created.
Fast Ethernet <4.11> belongs to VN # (1-17): 9
*** Note: A new VN has been created.
Fast Ethernet <4.12> belongs to VN # (1-17): 2
Fast Ethernet <4.13> belongs to VN # (1-17): 2
Fast Ethernet <4.14> belongs to VN # (1-17): 2
Fast Ethernet <4.15> belongs to VN # (1-17): 2
Fast Ethernet <4.16> belongs to VN # (1-17): 2
Ethernet port <5.1> belongs to VN # (1-17): 1  < Admin VN >
Ethernet port <5.2> belongs to VN # (1-17): 2
Ethernet port <5.3> belongs to VN # (1-17): 3
Ethernet port <5.4> belongs to VN # (1-17): 4
Ethernet port <5.5> belongs to VN # (1-17): 5
Ethernet port <5.6> belongs to VN # (1-17): 6
*** Note: A new VN has been created.
Ethernet port <5.7> belongs to VN # (1-17): 7
Ethernet port <5.8> belongs to VN # (1-17): 1
Ethernet port <5.9> belongs to VN # (1-17): 1
Ethernet port <5.10> belongs to VN # (1-17): 1
Ethernet port <5.11> belongs to VN # (1-17): 1
Ethernet port <5.12> belongs to VN # (1-17): 1
*** Note: no ports assigned to VN #10 - ELAN : elan2468_1
*** Note: no ports assigned to VN #11 - ELAN : elan1111_1
*** Note: no ports assigned to VN #12 - ELAN : elan2222_2
*** Note: no ports assigned to VN #13 - ELAN : elan3333_3
```

Downloaded from www.Manualslib.com manuals search engine

Admin VN Management Configuration Section In this section you are prompted for the Admin VN Management Configuration parameters: IP address, slot IP address, NMS address, default gateway, and subnet mask. Enter values as appropriate. These parameters support an NMS (Network Management Station) station which is connected to the CoreBuilder 7000 family ATM switch through its Ethernet port. The following example shows a typical Admin VN Management Configuration. Default values are displayed.

```
Admin VN Management Configuration
----------=-----------------------
 Switch IP address: 100.0.0.1
 Slot #3 IP address: 100.0.0.100
 NMS address: 255.255.255.0
 Default Gateway: 255.255.255.255
 Subnet Mask: 255.255.255.0
```

Confirmation Section This section prompts you to save all changed parameters and then prompts you to reboot the switch.

Downloaded from www.Manualslib.com manuals search engine

```
 Accept Changes
 =-------------
*** Note: Change of some parameters will take effect now!!

  Save changes (Y/N)? Y
  Are you sure (Y/N)? y
 Saving NMS parameters...
 Saving LE parameters...
 Saving Network Prefix...
 Saving resident LECS Address...
 Saving active LECS Address...
 Saving NNI parameters...
  The switch new configuration has been saved.
  Some changes will be effective only after reboot.

  Now applying the module in slot #4 ...

  Due to new VN configuration, some saved static
  entries in slot #4 have been invalidated.

  The new VN configuration in slot #4 has been applied and saved.

  Now applying the module in slot #5 ...

  The new VN configuration in slot #5 has been applied and saved.

  All the modules new configuration has been applied.
 Reboot the system  (Y/N)? y
 This will reset and reboot the device!
 Are you sure (Y/N)? y
 *** System will reboot in about one minute...
```

Prompt to save changes

Saving the switch configuration

Saving the edge device configuration

Prompt for reboot

Additional Switch Configuration

The Integrated Fast Setup configures a minimum set of network parameters - enough to get you started.

If you need to make changes or to perform additional configuration tasks, use individual items of the LMA menus. These are all described in the *CoreBuilder 7000 Family ATM Switches Management Guide.*

Some additional configuration tasks might be:

Downloaded from www.Manualslib.com manuals search engine

Configuring SVCs

CoreBuilder 7000 family ATM switches use standard UNI 3.0, 3.1 or 4.0 switched virtual channel (SVC). SVC mode can be used when CoreBuilder is in a backbone or workgroup topology, with PVC used whenever necessary. ILMI enables automatic address registration for SVC. Addresses can be registered manually via the LMA menus.

Changing the UNI Version

The CoreBuilder will run UNI 4.0 SVC by default. You can work in UNI 3.0 or UNI 3.1 by choosing this option in the signalling setup menu.

Configuring Network Prefix and ATM Addresses

ATM addresses are essential for establishing a connection using SVC. Most devices that support SVC, also support automatic address registration through the ILMI protocol.

A network prefix is essential for address registration to be executed. Refer to *CoreBuilder 7000 Family ATM Switches Management Guide* for proper network prefix setting.

For connectivity with devices that do not support ILMI, ATM addresses can be set manually using the Add ATM address function under ATM address setup in the Administration Console menus.

Configuring a PVC

Permanent Virtual Channels (PVC) can be used to connect to devices that do not support switched virtual channels (SVC) standard protocols. In the CoreBuilder 7000 family ATM switch you can create point-to-point (P2P) and point-to-multipoint (P2M) connections. Use the Setup and Configuration Connections menu, to create a PVC call, PTP or PTM. You can also create an out VC in a PTM call, release a PVC call, release an out VC from call, save PVC connections in flash memory and reset saved connections. Up to 2000 PVCs can be configured.

Configuring Clock Synchronization

External clock synchronization allows a clock to be received on one of the bottom of 4 OC-3c ports of an 8-port interface card from an external source, and to be distributed to all bottom OC-3c ports on the same card and other 8-port interface cards in the same chassis. It is used in voice and data applications so that the same port is used at the same time. You can configure one port to be the master port which will distribute its

Downloaded from www.Manualslib.com manuals search engine

information to the other ports (slave ports). For more information, see "Set and Save Clock Synchronization Mode" on page 120 in the Management Guide

Viewing Network Statistics

At any time after configuring the CoreBuilder 7000 family ATM switch, you can view the available statistics to see how the network is functioning. For example, you may want to display the general statistics for an overview of the network, or the signalling statistics for protocol information on specific ports. Table 17 lists the types of statistics available. To view a specific statistic, enter the menu path shown in the table. For more information, see the *CoreBuilder 7000 Family ATM Switch Management Guide*.

Table 17 Statistics Available

Menu Option	Path	Description
Display General Statistics	(4) STS: Statistics (1) GEN: General switch stats	Displays statistical totals for the switch.
Display Physical Layer Statistics	(4) STS: Statistics (2) PHY: Physical layer	Displays the physical layer statistics for a specified port.
Reset Physical-Layer Statistics	(4) STS: Statistics (8) PHR: Phy layer-reset counters	Resets physical statistics counters.
Display ATM-Layer Port Statistics	(4) STS: Statistics (3) ATM: ATM layer (1) PRT: Stats per port	Displays the ATM layer statistics for a specified port. Provides information on the capacity of traffic within ports.
Reset ATM-Layer Port Statistics	(4) STS: Statistics (9) ATR: ATM layer-reset counters (1) PRT: Reset counters per port	Resets the ATM-layer counters for a specified port.
Display ATM-Layer VPI/VCI Statistics	(4) STS: Statistics (3) ATM: ATM layer (2) VPC: Stats per VPI/VCI	Displays the ATM layer statistics for a VPI/VCI of a specified port.
Reset ATM-Layer VCI/VPI Statistics	(4) STS: Statistics (9) ATR: ATM layer-reset counters (2) VCC: Reset counters per VPI/VCI	Resets counters for an individual and every VPI/VCI for a specified port.
AAL5 Control Statistics	(4) STS: Statistics (5) CTL: Control frames (1) GET: Get Control frames	Displays the control frames (AAL5 layer) statistics, including protocol information, for a specified port.
Reset AAL5-Layer Control Statistics	(4) STS: Statistics (5) CTL: Control frames (2) RES: Reset Control frames	Resets AAL5-layer control statistics for a specified port.
Display Signaling Protocol Statistics	(4) STS: Statistics (6) SIG: Signaling	Displays the signaling protocol statistics for a specified port.

Downloaded from www.Manualslib.com manuals search engine

Table 17 Statistics Available

Menu Option	Path	Description
Reset Signaling Statistics	(4) STS: Statistics (10) SIR: Signaling-reset counters	Resets the signaling counters for a specified port.

Storing and Retrieving Configuration Parameters

This section discusses the configuration upload/download facility and includes the following topics:

- Configuration Upload/Download
- Organizing Configuration Files
- Activating the Downloaded Configuration
- Uploading the Configuration of a Card
- Downloading the Configuration of a Card
- Loading Software and Configuration Data by Utilities

Configuration Upload/Download

You can store (upload) the configuration of an installed card from its flash memory to an external disk and restore it (download) to the flash memory of the original card — or to the flash memory of a different card of the same type — at a later time. You can initiate this operation only through the LMA and not via a SNMP management application like Transcend.

This feature lets you:

- Back up your switch configuration in case of switch failure
- Transfer the configuration from one switch to another
- Maintain various standard configuration templates which can be loaded according to requirement

The configuration upload works for individual cards installed in the CoreBuilder 7000: either the active switch card or a CoreBuilder 7X00 Interface Card. You select the card whose configuration you want to download or upload from a list of installed cards.

When the switch operates in single-IP mode, you can use this facility to upload the configuration of any of the installed cards through the LMA of the switch card. When the switch is operating in multiple-IP mode, you can use this facility to upload the configuration of the switch card only.

Downloaded from www.Manualslib.com manuals search engine

You cannot upload or download configuration parameters to a switch card while it is installed as a redundant switch card. You need to remove the card from the chassis, install it in a different switch chassis as the active switch card and then perform the upload/download operation, as described below. Afterwards, return the card to its slot in the original chassis.

Uploading Selected Data Types

The CoreBuilder 7000 allows you to upload selected types of configuration data. The types of configuration data you can upload depends on the card you selected. For the switch card, the types of configuration data you can upload are as follows:

- All Configuration Data
- Platform Parameters
- ATM Addresses
- PNNI Configuration
- LANE Security
- PVC Connections
- LECS Topology
- LECS Order List

For a CoreBuilder 7X00 card, the data types are as follows:

- Platform Parameters
- Static

Organizing Configuration Files

The uploaded configuration files can be named using a naming convention of your choice. Normally, you will want to include information about the data type, the card type and a date or other identifier in the file name. For example, you might use file names like cfg_7000_12jun98 and static_7600_1.

When you download configuration data from the files on the disk to the card, you designate the card by its slot number. The slot can contain the original card from which the data was uploaded, or it can contain another card of the same type.

If you try to download configuration data which was uploaded from one type of card type to another type of card, an appropriate error message is issued.

Downloaded from www.Manualslib.com manuals search engine

Activating the Downloaded Configuration

When the configuration files are downloaded into flash memory, they overwrite the previous information. The new parameters are not activated immediately, but rather after the next reboot when they are read from the flash memory. The CoreBuilder 7000 assumes that the user wants to reboot the switch as soon as possible to activate the new configuration parameters. Therefore, subsequent to a configuration download, all LMA and SNMP set operations are blocked until the next reboot – except for the configuration upload/download and reboot operations.

It is recommended, therefore, to perform a configuration download only when you are ready to reboot and activate the new parameters.

Cards should not be "hot swapped" after a configuration download until after the next reboot.

Uploading the Configuration of a Card

To store (upload) the configuration of a card installed in the CoreBuilder chassis from flash memory to disk, first make sure that the switch is connected to the TFTP server and that it is in single-IP mode and then perform the following steps:

1. Perform the LMA menu command:
   `(1) SYS\ (3) LOA \(6) TCU`
2. The LMA automatically presents you with a list of the installed cards whose configuration you can upload to disk, for example:

```
Module Types:
    1<Switch module 7000>
    2<Slot 3 - 7600>
    3<Slot 4 - 7600>
    4<Slot 5 - 7400>
    5<Slot 6 - 7200>
Select Module: 1
```

   Select the appropriate card from the list—for example, if you want to upload the configuration of the active switch card, select 1 from the menu.

3. The types of configuration data you can upload are displayed as follows:

```
File Types:
   1<All>
   2<Box Profile>
   3<ATM Addresses>
   4<PNNI Configuration>
   5<LANE Security>
   6<PVC Connections>
```

Downloaded from www.Manualslib.com manuals search engine

```
   7<LECS Topology>
   8<LECS Order List>
   9<Other>
Select File type:
```

Enter the number of the type of configuration parameters you want to upload. For example, if you want to upload all configuration parameters, select File type 1.

4 Enter the IP address of the TFTP server:

```
Server IP address: 100.0.0.111
```

5 Enter the name of the file to receive the data on disk:

```
Name of file to be uploaded: 7000_cfg
```

Enter a file name without an extension. For the "All" option, the system adds sequential extensions.

6 Confirm the upload.

```
Start upload to 100.0.0.111, file name 7000_cfg, (Y/N)? y
```

The following messages are displayed for each data type:

```
Loading, file name switch/cfg/24_7_cfg.1, file type Box
Profile
```

```
Load process of file type Box Profile completed successfully
```

7 Verify the success status of the upload by the LMA menu item:

```
(1) SYS:\ (3) LOA: \(1) STS
```

The upload status is displayed as follows:

```
Load process completed successfully.
```

The status will be "success" only if all the files were successfully loaded. In case of failure to load a file, the "load all" process will be stopped without continuing to the next file, a failure indication is displayed, and the display status option displays the error message:

```
General Error occurred while loading
```

Loading a Single Configuration Data Type

If you want to upload a single data type instead of the entire configuration, proceed as follows from step 3:

3 `Select File type: 2`

4 `Server IP address: 100.0.0.111`

5 `Name of file to be uploaded: switch/cfg/box_prof.cfg`

Downloaded from www.Manualslib.com manuals search engine

For loading a single item you can enter a full file name.

6 `Start upload to 100.0.0.111, file name switch/cfg/box_prof.cfg, Box Profile (Y/N)? y`

`Load process started...`

Loading the "Other" Data Type

The "Other" item allows you to specify a file type by code number. This option is relevant to configuration data items in the CoreBuilder 7X00 cards and are specified in the Release Notes for those products; the configuration data item and its number (0–9999) are specified there.

If you want to upload the "Other" data type, proceed as follows from step 3:

3 `Select File type: 9`

4 `Insert file type (0-9999): 1001`

5 `Server IP address: 100.0.0.111`

6 `Name of file to be uploaded: switch/cfg/unknown.cfg`

7 `Start upload to 100.0.0.111, file name switch/cfg/unknown.cfg, 1001 (Y/N)? y`

`Load process started...`

Downloading the Configuration of a Card

To retrieve (download) the configuration of a card installed in the CoreBuilder chassis from disk to flash memory, first make sure that the switch is connected to the TFTP server and then perform the following steps:

1 Perform the LMA menu command:
`(1) SYS\ (3) LOA \(7) TCD`

2 The LMA automatically presents you with a list of the installed cards whose configuration you can download from disk, for example:

```
Module Types:
    1<Switch module 7000>
    2<Slot 3 - 7600>
    3<Slot 4 - 7600>
    4<Slot 5 - 7400>
    5<Slot 6 - 7200>
Select Module: 1
```

Downloaded from www.Manualslib.com manuals search engine

Select the appropriate card from the list—for example, if you want to download the configuration of the active switch card, select 1 from the menu.

Make sure you select a type of card that matches the configuration data on the files you want to download. In this case, the data on the files must have been uploaded from a switch card. If you choose the wrong type, the data will not be downloaded and you will get an error message.

3 The types of configuration data you can download are displayed as follows.

```
File Types:
   1<All>
   2<Box Profile>
   3<ATM Addresses>
   4<PNNI Configuration>
   5<LANE Security>
   6<PVC Connections>
   7<LECS Topology>
   8<LECS Order List>
   9<Other>
Select File type:
```

Enter the number of the type of configuration parameters you want to download. For example, if you want to download all configuration parameters, select File type 1.

4 Enter the IP address of the TFTP server:

```
Server IP address: 100.0.0.111
```

5 Enter the name of the file to receive the data on disk:

```
Name of file to be downloaded: 7000_cfg
```

Enter a file name without an extension. For the "All" option, the system adds sequential extensions.

After you confirm the download, all LMA and SNMP set operations are disabled until the download is finished and you reboot the system. The following warning is displayed:

```
Warning: This action will disable set operations on the
target Device.
```

6 Confirm the download.

```
Start download to 100.0.0.111, file name 7000_cfg, (Y/N)? y
```

The following messages are displayed for each data type:

Downloaded from www.Manualslib.com manuals search engine

```
Loading, file name switch/cfg/24_7_cfg.1, file type Box
Profile

Load process of file type Box Profile completed successfully
```

7 Verify the success status of the download by the LMA menu item:

```
(1) SYS:\ (3) LOA: \(1) STS
```

The download status is displayed as follows:

```
Load process completed successfully.
```

The status will be "success" only if all the files were successfully loaded. In case of failure to load a file, the "load all" process will be stopped without continuing to the next file, a failure indication is displayed, and the display status option will display the error message:

```
General Error occurred while loading
```

Loading Software and Configuration Data by Utilities

The following commands allow you to use RS-232 batch-file utilities to download and upload the executable software and the system configuration parameters for the CoreBuilder 7000 family ATM switch to an external disk via the RS-232 service port.

This ability allows you to easily restore the configuration to a switch which has failed or to configure a new switch with a standard configuration stored on disk.

The appropriate batch file is run via the RS-232 service port. Table 18 shows the utilities and the batch file names.

Table 18 Utilities for Upload/Download

Utility	Batch file name
General flash utility	fls_utl.bat
Format all configuration parameters groups in flash memory according to the mapping of version 4.0	cfgfrmat.bat
Upload all configuration parameters groups from the switch engine flash memory to PC file	cfg_upld.bat
Download all configuration parameters groups from PC file to the switch engine flash memory	cfg_down.bat
Upload a configuration parameter group from the switch engine flash memory to PC file	grp_upld.bat

Downloaded from www.Manualslib.com manuals search engine

Table 18 Utilities for Upload/Download (continued)

Utility	Batch file name
Download a configuration parameter group from the PC to the switch engine flash memory	grp_down.bat
Erase a configuration parameter group in the switch engine flash memory	grperase.bat
Set debug flag to ON	dbgon.bat
Set debug flag to OFF	dbgoff.bat
Download all software executable files to the flash memory	down_all.bat
Download all SW executables except atmsw.fls	downpart.bat
Download only atmsw.fls	downmain.bat
Download all software executable files to the flash memory and erase the configuration in flash memory	downoper.bat

Running a Batch File

To run a batch file (.bat) on your CoreBuilder 7000 family ATM switch, do the following:

1. Perform the menu item:
   `(1) SYS \(3) LOA \(3) LCL \ 1`
2. Reboot the CoreBuilder 7000 family ATM switch.
3. Connect your PC to the Service Port of the CoreBuilder 7000 family ATM switch.
4. In the PC, change the directory to the one containing the appropriate files.
5. Run the appropriate batch file from Table 18:
   a. Type the name of the batch file
   b. Type the appropriate ComPort switch (com1/com2)
   c. Type the appropriate Speed switch (19200/57600/115200)
   d. Press Enter
   e. Choose desired option at a prompt(s) (if at all)

Returning to Operational Mode

After the software has been stored or retrieved, the system will still be in load mode. To return the system to normal operational mode, use one of the following methods.

Downloaded from www.Manualslib.com manuals search engine

Method 1 - Shift "O"

1. Reboot the switch
2. Within 3 seconds of rebooting press Shift "O"
3. Perform the menu item
   `(1) SYS \(3) LOA \ (3) LCL \ 0`

   The system is now in operational mode.

Method 2 - dbgoff.bat

1. Run the batch file dbgoff.bat:
   a. Type dbgoff.bat
   b. Type the appropriate ComPort switch (com1/com2)
   c. Type the appropriate Speed switch (19200/57600/115200)
   d. Press Enter
   e. Wait for completion
2. Reboot the switch

   The system is now in operational mode.

Upgrading from E-IISP to PNNI

For full upgrade instructions, see Chapter 6 in the *CoreBuilder 7000 Family ATM Switches Management Guide*.The CoreBuilder 7000 has a special gateway function which allows E-IISP to PNNI connectivity and vice versa.

PNNI is available in version 4.5 extended only.

PNNI in E-IISP

Connecting PNNI to E-IISP is done in two ways:

- Using the 3.1 interface
- Using the PNNI to IISP/E-IISP gateway

Connecting PNNI to E-IISP and IISP networks requires addressing to match (use the same E.164 addressing scheme) in order to guarantee uniqueness. This is necessary because PNNI works on the best match routing scheme. The PNNI gateway function will advertise IISP and/or E-IISP addresses as either native or as foreign reachability addresses.

Downloaded from www.Manualslib.com manuals search engine

Migrating from E-IISP to PNNI

In order to migrate successfully to PNNI, the network manager must review the network address scheme that will be used. There are two possible approaches to implementing address change:

- Deriving a PNNI peer group ID and peer group level based on the E-IISP addressing scheme. See Chapter 3 in the Operations Guide for information on E-IISP addressing.
- Changing the E-IISP network prefixes to match the PNNI addressing scheme.

The gateway between E-IISP and PNNI must be between the E-IISP highest level and the PNNI gateway node.

Downloaded from www.Manualslib.com manuals search engine

7 REDUNDANCY IN THE COREBUILDER 7000 FAMILY ATM SWITCH

This chapter describes power supply redundancy in the CoreBuilder® 7000 family ATM switch. The operation of each redundant device is described. For information on installing redundant devices, see Chapter 4. For further information on switch redundancy, see the *CoreBuilder 7000 Family ATM Switch Operations Guide.*

This chapter includes the following topic:

- Redundant Power Supply

Redundant Power Supply

This section discusses the following topics:

- Types of power supplies available
- Power requirements of the CoreBuilder 7000 family switching and interface cards
- Using redundant switching cards and redundant power supplies.

Types of Power Supplies

The CoreBuilder 7000 family supports three kinds of power supplies: an AC unit rated at 90A, and two DC units rated at 90A and 40A. You can use each one of them in any CoreBuilder 7000 family ATM switch. The power supply supports two output channels: one 5V DC channel which supplies the CoreBuilder switch and the interfaces cards, and one 12V DC channel which supplies the fans.

Downloaded from www.Manualslib.com manuals search engine

The CoreBuilder 7000 family power supplies are shown in Table 19.

Table 19 CoreBuilder 7000 Family Power Supplies

Power Supply	Current	3Com Number
CoreBuilder 7000/7000HD AC Power Supply	90A	3C37010A
CoreBuilder 7000/7000HD DC Power Supply	90A	3C37027
CoreBuilder 7000/7000HD DC Power Supply	40A	3C37026

Power Supply Operation

Load Sharing

The power supplies can operate in load-sharing mode; two 90A power supplies can produce up to 180A. Providing that the power consumption of the unit does not exceed 90 A, load-sharing allows one power supply to serve as a backup.

Overloading

When the installed power supply is rated for less than the required power consumption of the CoreBuilder module, the CoreBuilder will not succeed in powering up. It will attempt to power up, hit the current overload rate and turn the power supply off, going through this cycle repeatedly until the load is reduced.

Calculating the Power Consumption of CoreBuilder Switch

The power consumption of an entire CoreBuilder 7000 family ATM switch unit is calculated by adding up the power consumption of the switching card(s) and interface cards installed in the chassis. Normally, the values for *typical* power consumption can be used in the calculation. Table 20 shows the typical power consumption values for the CoreBuilder 7000 family ATM switching cards and interface cards.

Table 20 Typical Power Consumption of CoreBuilder 7000 Family Cards

Component Description	3Com Number	Typical* Power Consumption (Amp)
CoreBuilder Kit and Switching Card		
CoreBuilder 7000 Kit (one switching card and one power supply)	3C37000	6.3
CoreBuilder 7000 Redundant Switching Card†	3C37016	6.3
CoreBuilder 7000HD Kit (one switching card and one power supply)	3C37001	8.1

Downloaded from www.Manualslib.com manuals search engine

Table 20 Typical Power Consumption of CoreBuilder 7000 Family Cards

CoreBuilder 7000HD Redundant Switching Card	3C37032	8.1
4-port and 8-port ATM Interface Cards		
CoreBuilder 7000 4-port ATM interface card with ■ 4 OC-3c multimode fiber interfaces	3C37052	5.4
CoreBuilder 7000HD 8-port interface card with ■ 4 OC-3 multimode ATM interfaces installed ■ 4 ATM interface receptacles unoccupied	3C37152	6.3
CoreBuilder 7000HD 8-port interface card with ■ 8 OC-3 multimode ATM interfaces installed	3C37158	11.7
CoreBuilder 7000HD 8-port interface card with ■ 4 OC-3 multimode ATM interfaces ■ 2 622 ATM interfaces	3C37152	19.0
ATM Physical Modules		
CoreBuilder 7000 622 OC-12 MM Physical Module	3C37080	5.0
CoreBuilder 7000 622 OC-12 SM Physical Module	3C37081	5.0
CoreBuilder 7000 OC-3c SM Physical Module	3C37058	1.4
CoreBuilder 7000 OC-3c MM Physical Module	3C37060	0.9
CoreBuilder 7000 DS-3 Physical Module	3C37061	0.9
CoreBuilder 7000 TP 155M Physical Module	3C37061	0.9
CoreBuilder 720X Ethernet/ATM Interface Card		
7200 Ethernet/ATM interface card with ■ 12 10Base-T, RJ-45 interfaces ■ 3 OC-3c multimode ATM interfaces	3C37262	7.2
7201 Ethernet/ATM interface card with ■ 12 10Base-T, RJ-45 interfaces ■ 3 ATM interface receptacles unoccupied	3C37263	4.5
7200F Fiber Ethernet/ATM Interface card with ■ 12 10Base-FL ports, ST con. ■ 3 OC-3 multimode ATM interfaces	3C37264	10.8
7201F Fiber Ethernet/ATM Interface card with ■ 12 10Base-FL ports, ST con. ■ 1 OC-3 multimode ATM interface ■ 2 ATM interface receptacles unoccupied	3C37266	8.1

Downloaded from www.Manualslib.com manuals search engine

Table 20 Typical Power Consumption of CoreBuilder 7000 Family Cards

CoreBuilder 74XX Ethernet/ATM Interface Card		
7400 Ethernet/ATM interface card with ■ 24 Ethernet ports (2 RJ-21 connectors) ■ ATM interface receptacle unoccupied	3C37400	4.5
7412 Ethernet/ATM Expansion Module with ■ 12 Ethernet ports (1 RJ-21 connector) ■ ATM interface receptacle unoccupied	3C37412	3.6
7436 Ethernet/ATM Expansion Module with ■ 36 Ethernet ports (3 RJ-21 connectors) ■ ATM interface receptacle unoccupied	3C37436	8.1
CoreBuilder 76XX Fast Ethernet Interface Card		
7600F Fast Ethernet Interface Card with ■ 16FX Fast Ethernet ports	3C37600	23.4
7608F Fast Ethernet Interface Card with ■ 8FX Fast Ethernet ports ■ 8 Fast Ethernet ports unoccupied	3C37608	16.2
7660F Fast Ethernet Interface Card with ■ 2FX Fast Ethernet ports ■ 14 Fast Ethernet ports unoccupied	3C37660	1.8
7600T Fast Ethernet Interface Card ■ 16TX Fast Ethernet ports	3C37601	20.7
7608T Fast Ethernet interface card ■ 8TX Fast Ethernet ports ■ 8 Fast Ethernet ports unoccupied	3C37617	15.3
7662T Fast Ethernet module ■ 2TX Fast Ethernet ports ■ 14 Fast Ethernet ports unoccupied	3C37662	1.4

* The typical power consumption values represent typical traffic, load and line speed of the CoreBuilder and interface cards. Maximum power consumption of the cards is 10% higher than the typical values, and occurs when all card ports are working at full rate

† A redundant switch has the same power requirements as the active switch

Downloaded from www.Manualslib.com manuals search engine

Required Power Supply for Various CoreBuilder Installations

Table 21, which is calculated from Table 20, shows the number of power supplies required (Single or Dual) for various CoreBuilder 7000 installations. The first column describes the particular combination of cards installed and covers the most common applications. The second column shows the number of power supplies required if a redundant switch is not installed; the third column shows the number of power supplies required if a redundant switch is installed.

Table 21 Required Power Supply for Various Installations

Cards Installed in CoreBuilder Chassis	No Redundant Switch Installed	Redundant Switch Installed
Data Center - High-density Fast Ethernet and ATM		
■ CB7000 HD Switching Card ■ 4 X CB7600F Fast Ethernet Interface Card	Dual 90A	Dual 90A
■ CB7000 HD Switching Card ■ 4 X CB7600T Fast Ethernet Interface Card	Single 90A	Dual 90A
■ CB7000 HD Switching Card ■ 3 X 7600F Fast Ethernet Interface Card ■ 1 X 8-port ATM Interface Card	Single 90A	Dual 90A
■ CB7000 HD Switching Card ■ 3 X 7600T Fast Ethernet Interface Card ■ 1 X 8-port ATM Interface Card	Single 90A	Single 90A
Data Closet - Ethernet		
■ CB7000 Switching Card ■ 4 X 7436 ATM Interface Card	Single 90A	Single 90A
■ CB7000 Switching Card ■ 3 X 7436 ATM Interface Cards	Single 90A	Single 90A
ATM Data Center with high-density Fast Ethernet		
■ CB7000HD Switching Card ■ 1 X 7600F ATM Interface Card ■ 3*8 port ATM Interface Cards	Single 90A	Single 90A
■ CB7000HD Switching Card ■ 1 X 7600T ATM Interface Card ■ 3*8 port ATM Interface Cards	Single 90A	Single 90A

Downloaded from www.Manualslib.com manuals search engine

Table 21 Required Power Supply for Various Installations (continued)

Other applications		
■ CB7000 Switch Card ■ 4 X 7262 Ethernet/ATM Interface Card	Single 90A	Single 90A

Providing Redundancy for Various Power Loads

This section describes when redundant switch cards and redundant power supplies can be used in a CoreBuilder switch.

In order to determine whether a redundant switch card and/or an redundant power supply can be used in a CoreBuilder switch, the total power consumption of all installed cards must be examined. According to the total power consumption, there are three possibilities, as the following examples illustrate:

Installation I: The total power consumption of a single switching card (that is, no redundant card installed) and all interface cards exceeds 90A. In this case, a Dual 90A supply is required so that the second power supply cannot be redundant. A redundant switch card can be installed. This "heavy load" installation is illustrated by the first example installation in Table 21.

Installation II: The total power consumption of two switching cards (i.e., redundant card installed) and all interface cards exceeds 90A but without the second switching card the consumption is less than 90A. In this case, either a redundant switch card or a redundant power supply can be installed, but not both. This "medium load" installation is illustrated by the second example installation in Table 21.

Installation III: The total power consumption of two switching cards and all interface cards does not exceed 90A. In this case, both a redundant switch card and a redundant power supply can be installed. The light load installation is illustrated by the fourth example installation in Table 21.

In all installations that do not include multiple CB7600 cards both redundant switch cards and redundant power supplies can be installed.

Downloaded from www.Manualslib.com manuals search engine

Power Supply Specifications

90A AC Power Supply

Table 22 CoreBuilder 7000 (3C37010A) Enhanced Power Supply Specifications

Parameter	Channel 1	Channel 2
Nominal output voltage (V)	5	12
Output voltage range (V)	5 +/- 5%	12 +/- 3%
Maximum output current (A)	90	2
Minimum output current (A)	0	0
Maximum output power (W)	450	24
Input voltage range (V)	85 – 265	
Input current range (A)	6.8A@100VAC 3.4A@200VAC	
Inrush current (A)	25A@100VAC 50A@200VAC	
Frequency (Hz)	47 ~ 63	
Operating temperature (Celsius)	-10 ~ 40	
Safety	UL1950, EN60950	
Efficiency (%)	75	
Max power input (W)	632	
P.S Heat Dissipation (W)	158	
Heat Dissipation (BTU)	2156	

40A DC Power Supply

Table 23 CoreBuilder DC (3C37026) Power Supply Specifications

Parameter	Channel 1	Channel 2
Nominal output voltage (V)	5	12
Output voltage range (V)	5 +/- 5%	12 +/- 3%
Maximum output current (A)	40	2
Minimum output current (A)	0	0
Maximum output power (W)	200	24
Input voltage range (V)	36-72	
Input current range (A)	6.2A@48VDC	
Inrush current (A)	30A@48VDC	
Operating temperature (Celsius)	0 ~ 40	
Safety	UL478, 1950/CSA22.2/TUV EN60950	

Downloaded from www.Manualslib.com manuals search engine

Table 23 CoreBuilder DC (3C37026) Power Supply Specifications (continued)

Efficiency (%)	76
Max power input (W)	295
P.S Heat Dissipation (W)	71
Heat Dissipation (BTU)	1005

40A DC Power Supply

Table 24 CoreBuilder DC (3C37027) Power Supply Specifications

Parameter	Channel 1	Channel 2
Nominal output voltage (V)	5	12.3
Output voltage range (V)	5 +/- 5%	12.3 +/- 3%
Maximum output current (A)	90	2
Minimum output current (A)	0	0
Maximum output power (W)	450	24
Input voltage range (V)	36-72	
Input current range (A)	13.0A@48VDC	
Inrush current (A)	35A@48VDC	
Operating temperature (Celsius)	0 ~ 40	
Safety	UL478, 1950/CSA22.2/TUV EN60950	
Efficiency (%)	76	
Max power input (W)	625	
P.S Heat Dissipation (W)	150	
Heat Dissipation (BTU)	2123	

Downloaded from www.Manualslib.com manuals search engine

8 TROUBLESHOOTING

This chapter explains how to troubleshoot specific problems you may encounter during power-on and system operation. It also shows how to perform related diagnostic tasks, such as replacing fuses or cleaning fiber optic cables.

If you experience problems that are not addressed in this chapter, contact 3Com Technical Support (see Appendix E).

Solving Common Problems

The following problems may arise while working with the CoreBuilder® 7000 family ATM switch. If your problem does not appear on this list, view relevant statistics and parameters using the Administration Console menus (refer to the *CoreBuilder 7000 Family ATM Switches Management Guide*). You can also contact 3Com Technical Support. Also, be sure to read through the release notes.

Table 13 Recommended Action for Common Problems

Problem	Recommended Action
Terminal does not show anything	If the control terminal is physically connected to the CoreBuilder 7000 family ATM switch, but does not load the Administration Console Menus, verify that your terminal setup matches the specifications (see "Connecting the Control Terminal" on page 46). Also, make sure your cable is configured as DCE (see "Ethernet Cabling" on page 118).
Port cables do not work	If the cables attached to the CoreBuilder 7000 family ATM switch interface ports do not work, check that the connectors are firmly snapped in place. Also, make sure that each wire connects to Rx on one end and Tx on the other.
ACT LED not blinking	When the CoreBuilder 7000 family ATM switch is activated, the switch module and interface cards ACT LEDs should be blinking. If not, verify that the switch module and interface cards are properly inserted. Make sure that the control terminal is connected to the control port correctly, as an incorrect connection of this cable sometimes results in the inability of the system to function properly.

Downloaded from www.Manualslib.com manuals search engine

Table 13 Recommended Action for Common Problems (continued)

Problem	Recommended Action
Interface Card fails	If one of the interface cards fails, use the Initialize Interface (INI) option in the System (SYS) menu, Interface (IFC) option to reinitialize the interface. If this fails, you can try to restart the whole unit again. If neither of these actions correct the problem you should contact a 3Com service person. When handling modules, always use a wrist strap that is connected to a proper ground. This prevents the module from being damaged by electrostatic discharge.
Fans do not rotate	If the fans do not work when the unit is powered up, the fan tray may not be inserted properly. Unplug the power cord and reinsert the fan tray properly against the enclosure.

Power Supply Troubleshooting

This section discusses common problems related to the CoreBuilder 7000 family ATM switch power supply.

Table 14 Problems Related to the Power Supply

Problem	Possible Cause	Recommended Action
CoreBuilder 7000 family ATM switch not receiving power	■ The CoreBuilder 7000 family ATM switch is not connected to/receiving external power. ■ The power supply malfunctioned. ■ A fuse is blown.	**1** Check that the power cord is firmly plugged into both the system and the building's power outlet. **2** Check that the power cable meets the requirements described in the *Safety Rules* section of Chapter 3. **3** Restart the system by replugging the power cord. **4** If the problem persists, consider replacing the power cable, replacing the power supply and checking the power supply fuse; the fuse resides within the power supply. You have to extract the power supply in order to check and replace a fuse. **5** If the system is still not operating, contact 3Com Technical Support or your service person.
Circuit breaker has tripped	■ External wiring problem ■ Power supply failure	**1** Unplug the power cord of the system. **2** Verify that the system is properly connected to AC power with the correct voltage. See Appendix A: CoreBuilder 7000 Family ATM Switch Specifications. **3** If the power connection is the problem, replace the cable. If the problem remains, contact 3Com Technical Support.

Downloaded from www.Manualslib.com manuals search engine

Related Diagnostic Procedures

When troubleshooting problems occur, you may have to perform minor procedures to help correct the problem. These procedures are described below. For more complex operations on the CoreBuilder 7000 family ATM switch, contact 3Com Technical Support.

Table 15 Diagnostic Procedures

Procedure	Action
Checking fan operations	In case of system overheating, check that the power supply fan and the fans in the fan tray are operating. To check for fan movement in the CoreBuilder 7000 family ATM switch's fan tray, pull a few modules from the chassis to view the fans on the left side of the system.
Cleaning dirty fiber optic cables*	Fiber optic transceivers are sensitive optical devices that need to be handled carefully. If dirt collects on the fiber optic lens, you may notice that the LED for an ATM port link status does not light. You may also notice degraded performance of that port, indicated by an increase in the physical layer statistics count for that port. To prevent dust from collecting on the fiber optic lens, keep the dust covers on the ports at all times when they are not in use. To clean a fiber optic lens, follow the procedure below: **1** Remove any accumulated dust or debris from the port or connector by blowing off all surfaces with a canned air duster. **2** Compressed gas is recommended, such as Chemtronics' Ultrajet ® or the Triangle Tool Group's Liqui-Too!™ Dust-A-Way. Do not use commercial compressed air or "house air" because of the risk of oil contamination. **3** Reconnect the cable to the port to see if the dusting corrected the problem. **4** If the LED still does not appear, or if it lights yellow, continue with steps 5 and 6. **5** Gently wipe the ports with a lint-free, non-abrasive, non-adhesive swab. Microswabs™ by Texwipe™ are recommended. **6** Gently wipe the connectors with a lint-free, non-abrasive wipe or pad. Texwipe™ pads are recommended.

* See safety precautions in next section.

Safety Precautions for Fiber Optics Connectors

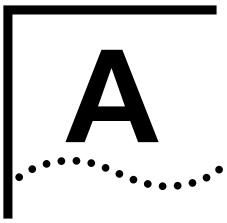
Avoid touching all surfaces after cleaning the connectors, and keep all unused ports covered.

Vermeiden Sie das Berühren aller Oberflächen nach dem Säubern der Kontakte und verdecken Sie alle nicht benutzten Öffnungen.

Ne toucher aucune surface après le nettoyage des connecteurs et garder les pièces inutilisées couvertes.

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine



ATM Switch FA/24 Cell Switching Module Specifications

Physical Dimensions	■ Height: 38.8 cm (15.3 in) ■ Width: 3.81 cm (1.5 in) ■ Depth: 32.7 cm (12.8 in) ■ Weight: 1.7 kg (3.74 lb)
Environmental Requirements	
Operating Temperature	■ 0° to 40° C (32° to 104° F)
Operating Humidity	■ 10 to 90% relative humidity, non-condensing
Storage Temperature	■ -20° to 75° C (-4° to 167° F)
Storage Humidity	■ 95% maximum relative humidity, non-condensing
Thermal Rating	■ 505 watts maximum ■ 1724 BTU/hour maximum
Safety	
Agency Certifications	■ UL 1950, CSA 22.2 No. 1950, EN 60950, IEC 825-1 825-2, PCB UL 94V-0, PCB ANSI/IPC-RB-276 class 2
Designed to Comply with	■ VDE 0871 part 2 class A, EN 55022
AC Protection	■ 20 amp circuit breaker
Electromagnetic Compatibility	■ Meets FCC part 15, Subparagraph B, Class A limits. ■ Directive complied with: EMC 89/336/EEC as amended by 92/31/EEC and 93/68/EEC. Emission: EN50081-1 (EN55022) Immunity: EM50082-1 (IEC801-2,-3,-4)

Downloaded from www.Manualslib.com manuals search engine

Power Supply	
AC Line Frequency	■ 47 to 63 Hz
Input Voltage Options	■ 110/220 Volt Auto selectable
Current Rating	■ 5/2.8 amps typical
Redundancy (optional)	■ dual power supplies
Standards supported	**SNMP** ■ MIB II (RFC 1213) ■ AToM MIB (RFC 1695) ■ AToM 2 (Circuit Statistics) ■ SONET MIB ■ Private chassis MIB ■ PNNI MIB **ATM** ■ Signaling - UNI 3.0/3.1/4.0 ■ ILMI - UNI 3.0/3.1/4.0 ■ PNNI -1.0 ■ IISP ■ LE 1.0
CoreBuilder Management and Interface LEDs	**Switch Module** ■ PWR - Power indication (Green) ■ FAIL - Module fail indication (Red) ■ ACT - Activity, module active and running (Yellow) ■ 10BASE-T status - Ethernet port status (Green) ■ Service port status - RS-232 (Green) ■ Control port status - RS-232 (Green) **Interface Card** ■ PWR ■ FAIL ■ ACT ■ LINK STATUS - per port physical layer status (Green) ■ FAIL - per port interface status (Red) ■ ACT - per port traffic activity (Yellow)

Downloaded from www.Manualslib.com manuals search engine

CoreBuilder Management and Interface Connectors	**Management** ■ Management - RJ-45 - Standard Ethernet connector ■ Service - RS-232 - 9 pin D-type-standard DCE. ■ Control - RS-232 - 9 pin D-type standard DCE. **Interfaces** ■ ATM port OC-3-SC connector Multimode fiber ■ ATM port OC-3-SC connector Singlemode fiber (category 1 - short reach) ■ ATM port DS-3-BNC connector coax 75 Ohm cable

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

B

SAFETY INFORMATION

This appendix contains safety information about the CoreBuilder® 7000 family ATM switchFA/24 Cell Switching Module, including:

- Guidelines for avoiding bodily harm.
- Guidelines for avoiding equipment damage.

Bodily Harm

To avoid bodily harm as well as possible damage to your CoreBuilder 7000 Family ATM SwitchFA/24 Cell Switching Module, follow these precautions.

- Do not lift the system without the assistance of another person. A fully-configured CoreBuilder 7000 Family ATM SwitchFA/24 Cell Switching Module weighs 43 pounds (19.5 kg) as shipped.
- Do not insert any metal objects, such as a screwdriver or a finger with jewelry, into an open slot when the system is powered on, for example, when you are installing or replacing a module. This could cause burns or other bodily harm, as well as system damage.
- CLASS 1 LED PRODUCT

  3Com recommends that you do not look into the LED while it is powered on, either with the naked eye or through any magnifying device.

  Class 1 LED products include:

  - ATM Multimode Interface (OC-3, OC12)
  - 8-Port Board ATM Interface Module
  - 4-Port Board ATM Interface Module
  - CoreBuilder 7200F Interface Module
  - CoreBuilder 7600 (Fx interface) Interface Module
- CLASS 1 LASER PRODUCT

Downloaded from www.Manualslib.com manuals search engine

3Com recommends that you do not look into the Laser while it is powered on, either by the naked eye or through any magnifying device.

Class 1 laser products include

- ATM Single Mode Interface (OC-3, OC12)
- 8-Port Board ATM Interface Module
- 4-Port Board ATM Interface Module
- CoreBuilder 7800 Interface Module

Körperliche Schäden

Um Schaden am Körper wie auch möglicherweise Schäden an Ihrem CoreBuilder 7000 ATM Schalter zu vermeiden, folgen Sie diesen Vorsichtsregeln:

- Heben Sie das System nicht ohne Hilfe einer anderen Person hoch. Ein voll ausgerüsteter CoreBuilder 7000 ATM Schalter wiegt bei Versand 43 Pfund (19.5 kgs).
- Steht das System unter Strom, wenn sie ein Modul installieren oder auswechseln, führen Sie keine Metallgegenstände, wie einen Schraubenzieher oder einen Finger mit Schmuck in den offenen Schlitz ein. Das könnte zu Verbrennungen oder anderen Körperschäden führen, sowie auch zu Schäden am System.

Dommages corporels

Afin d'éviter des blessures ainsi qu'un dommage possible au commutateur CoreBuilder 7000 ATM, prendre les précautions suivantes.

- Ne pas soulever le système sans l'assistance d'une autre personne. Un commutateur complètement monté CoreBuilder 7000 Family ATM SwitchFA/24 Cell Switching Module pèse environ 43 livres (19,5kg) lorsqu'il est livré. .
- Si le système est alimenté lors de l'installation ou du remplacement d'un module, ne jamais insérer d'objet métallique tel qu'un tourne-vis ou un doigt portant un bijou dans la fente. Cela est susceptible de provoquer brûlures ou autres dommages corporels, et d'endommager le système.

Equipment Damage

To avoid damaging your CoreBuilder 7000 Family ATM SwitchFA/24 Cell Switching Module, follow these precautions:

Downloaded from www.Manualslib.com manuals search engine

- When handling replacement parts, 3Com recommends that you always use a wrist strap connected to a proper ground. This helps prevent the part from being damaged by electrostatic discharge. Additionally, when not in use, the module should be stored in an antistatic bag.
- Cover every empty slot with a faceplate to protect the system from dust or other foreign substances, and to ensure proper system cooling.

Schäden am Gerät

Um Schäden an ihrem CoreBuilder 7000 Family ATMFA/24 Cell Switching Module Schalter zu vermeiden, folgen Sie diesen Vorsichtsmaßnahmen:

- Wenn Sie Ersatzteile handhaben, benutzen Sie immer ein Band am Handgelenk, daß gut geerdet ist. Das hilft vermeiden, daß das Ersatzteil durch elektrostatische Entladung beschädigt wird. Darüber hinaus sollte ein Modul, wenn nicht benutzt, in einem antistatischen Beutel aufbewahrt werden.
- Verdecken Sie jeden leeren Schlitz mit einer Abdeckplatte, um das System vor Staub oder anderen Fremdkörpern zu schützen und richtiges Abkühlen des Systems zu erreichen.

Dommage causé à l'équipement

Afin d'éviter d'endommager le commutateur CoreBuilder 7000 Family ATM SwitchFA/24 Cell Switching Module, prendre les précautions suivantes:

- Lors de la manipulation des pièces de rechange, 3Com recommande de toujours utiliser une bande attachée au poignet et reliée à la terre. Cela aidera à éviter que la pièce ne soit endommagée par une décharge électrostatique. De plus, lorsqu'il n'est pas utilisé, le module doit être conservé dans un emballage antistatique.
- Couvrir toute fente vide afin de protéger le système de la poussière ou d'autres corps étrangers et d'assurer un refroissement correct du système.

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

C

SITE REQUIREMENTS

This appendix addresses the various requirements to be met when preparing the CoreBuilder® 7000 family ATM switch site. This includes the following elements:

- Performing all necessary planning, ordering, installing, and maintenance.
- When required, contacting the appropriate facilities manager for assistance.
- Ensuring that all building and electrical code requirements (national, state, and local) are met.

Environmental and Safety Requirements

This section includes environmental and safety requirements are applicable to the installation of the CoreBuilder 7000 family ATM switch.

Protective Grounding

For your safety and to ensure optimum performance of the system, verify that all protective grounding requirements have been met in accordance with the applicable national, state, and local electrical codes.

You must also verify that you have properly grounded the distribution rack. This is normally done with a distribution rack grounding kit and a ground conductor that is carried back to earth or to another suitable building ground. Proper distribution rack grounding will ensure that voltages induced into wiring by lightning or other disturbances are directed to ground.

Environmental Specifications

For the system to operate properly, the following environmental conditions should exist:

- Ambient air temperature: 0° to 40° C (32° to 104° F).
- Operating humidity: 10 to 95% relative humidity (non-condensing).

Downloaded from www.Manualslib.com manuals search engine

- Power requirements: 115-Volts AC power, 15-Amp service receptacles, type N5/15 or NEMA 5-15R (for U.S.) or 220 Volts AC for Europe.

Thermal Recommendations

This sections contains recommendations for handling the heat generated by the CoreBuilder 7000 family ATM switch. It is essential that you provide a suitable environment for both performance and safety.

General Recommendations

The following are some general thermal recommendations for the wiring closet:

- Ensure that the ventilation in the wiring closet is adequate to maintain a temperature below 40° C (104° F).
- During non-business hours, make sure that the ventilation is not shut down while a CoreBuilder 7000 family ATM switch remains powered up; otherwise, the equipment may overheat.

Power and Heat Specifications

The following are power and heat specifications for the CoreBuilder 7000 family ATM switch:

- Maximum power consumption: 250 Watts
- Maximum heat generated: 1724 BTU per hour
- Operating temperature: 0° to 40° C (32° to 104° F)

Wiring Closet Considerations

The cabling system used at the facility should cover the majority of wiring closet concerns. You may want to consider the following recommendations.

- Verify that the facility meets all requirements mentioned in the system cabling plan.
- Ensure that the system is easily accessible for installation and service.
- Use AC power, 15-Amp service receptacles, type N5/15 or NEMA 5-15R for 120Vac.
- Select a vinyl floor covering for the wiring closet. (Concrete floors tend to accumulate dust, and carpets often cause static electricity.)
- Ensure that the wiring closet floor is flat and level. If the floor is not level, ensure that the racks are bolted to the floor to prevent them from tipping over.

Downloaded from www.Manualslib.com manuals search engine

- Ensure that all wiring closets have doors with locks to prevent unauthorized access.
- Provide adequate overhead lighting in the wiring closet for easy maintenance.
- Ensure that each wiring closet has a suitable ground. All metal racks, enclosures, boxes, and raceways in the closet should be grounded.
- Assign wiring closet identification numbers using architectural location codes or some type of floor grid matrix.
- Ensure that all system environmental requirements are met (such as ambient temperature and humidity).

Distribution Rack Requirements

This section describes the basic mechanical and space requirements for the distribution rack (refer to Figure 16).

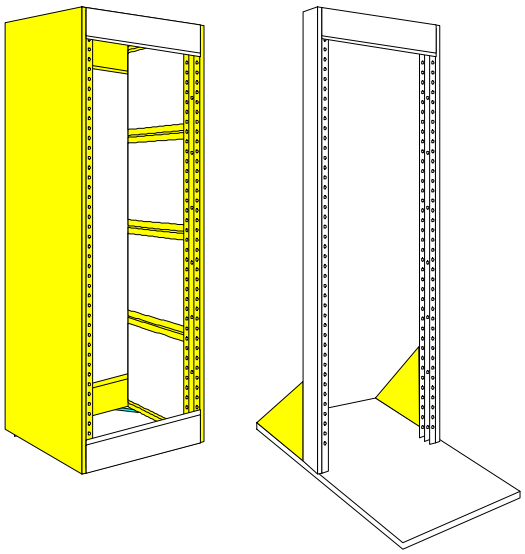


Figure 16 Distribution racks

Mechanical Requirements

Racks should comply with the standards and requirements mentioned in the cabling system plan and should conform to conventional standards. In the United States, use EIA Standard RS-310C: Racks, Panels, and Associated Equipment. In countries other than the United States, use IEC Standard 297: Dimensions of Panels and Racks.

The following are distribution rack requirements:

Downloaded from www.Manualslib.com manuals search engine

- Use an open style, 19-inch rack. The rack styles shown in Figure 16 facilitate easy maintenance and provide excellent ventilation.
- The rack should use the universal mounting rail hole pattern identified in IEC Standard 297.
- The rack should be made of steel.
- The rack should support approximately 272 kilograms (600 pounds).
- The rack should have adequate electrical grounding. A distribution rack grounding kit may be used.
- The rack should be attached to the wiring closet floor with 9.5 millimeters (3/8 inch) lag screws or equivalent hardware. The floor under the rack should be level within 5 millimeters (3/16 inch). Use a floor leveling cement compound if necessary or bolt the racks to the floor.
- Brace open racks if the channel thickness is less than 6.4 millimeters (1/4 inch).
- Install equipment in the lower half of the equipment rack to avoid making the rack top too heavy.

Downloaded from www.Manualslib.com manuals search engine

D

CABLING REQUIREMENTS

This appendix addresses many aspects of installing optical fiber cabling to support the CoreBuilder® 7000 family ATM switch environment. It also deals with modem cables and Ethernet and control cables for management. The following topics are covered:

- Installing New Cabling
- ATM Cabling
- Ethernet Cabling

Installing New Cabling

If you are installing new cabling, follow these guidelines:

- 3Com recommends that you use a cabling system plan, such as AT&T's Premises Distribution System (PDS) or the IBM Cabling System.
- Determine how many CoreBuilder 7000 units are going to be supported by each wiring closet, and how many downlink connections from these CoreBuilder 7000 units are planned.
- Locate wiring closets to enable connections to the different floors.
- To simplify installation of the network and to aid in troubleshooting, install a telephone in each wiring closet for communication between wiring closets, work areas, and other locations.
- Include all linear distances (vertical rises, etc.) in the cable plan so that all cables - from wiring closet to desk and to other wiring closets - are under their respective maximum lengths.

Cable Labeling and Record Keeping

A reliable cable labelling and record keeping system is essential when planning any network installation. A good cable labelling system provides enough information for you to locate the opposite end of any cable. Maintaining accurate records helps you to:

- relocate devices easily

Downloaded from www.Manualslib.com manuals search engine

- make changes quickly
- isolate faults in the distribution system

Consult the cabling system plan to set up the cable labeling and record keeping system best suited to the environment. Also consider the following recommendations:

- Identify cables by securely attaching a label to the ends of all cables.
- Draw a floor location grid matrix using the building floor plans. For easy reference, use this grid when assigning location numbers to cables.
- Assign a unique block of sequential numbers to the group of cables that run between each pair of wiring closets.
- Assign a unique identification number to each distribution rack.
- Make all work areas and wiring closets easy to identify by labeling the front panel of the CoreBuilder 7000 and other hardware and by displaying the floor location grid and cabling plan in each wiring closet.
- Keep accurate and up-to-date cable identification records, such as IBM's Cable Identification Label Sheet or Cable Schedule. Post records near each distribution rack. On the appropriate cable schedule, record the following cable drop information: the cable source, destination, jumper location, and any additional information.
- Make sure that optical and coax cables are labeled Rx and Tx accordingly.

ATM Cabling

When planning the installation, thoroughly inspect the present cabling to determine if it meets the specifications in the cabling system or standards used at the site.

In addition to adhering to the local standards, all cable must conform to the American National Standard *ATM Physical Layer Medium Dependent* (PMD) standard, ISO.166-1990, American National Standards Institute, which defines the Physical Medium Dependent (PMD) layer of the ATM network. Currently, there are two approved PMD standards: Multi-mode Fiber (MMF-PMD), which is defined in ANSI standard X.3-166-1992, and Single Mode Fiber (SMF-PMD), which is defined in ANSI standard x.3-184-198x.

Downloaded from www.Manualslib.com manuals search engine

3Com supports multi-mode fiber (MMF-PMD) 62.5/125 µm and Category one (1) single mode fiber (short reach) (SMF-PMD). When deciding whether to use multi-mode or single mode fiber, determine the maximum interstation distance (the distance from the CoreBuilder 7000 to any potential end station):

- If the maximum interstation distance is less than or equal to 2 kilometers (1.25 miles), use multi-mode fiber (MMF-PMD).
- If the maximum interstation distance is greater than 2 kilometers (1.25 miles) and less than or equal to 14.4 kilometers (8.6 miles), use single mode fiber (short reach) (SMF-PMD).

Caring for Fiber Optic Transceivers

Fiber optic transceivers are sensitive optical devices that need careful handling. The following information offers suggestions about caring for fiber optic cable.

Dirt on the Fiber Optic Lens

If dirt collects on the fiber optic lens, you may notice that the LED for an ATM port either does not light or lights yellow. You may also notice degraded performance of that port, as indicated by a decrease in the Link Error Rate (LER) estimate for that port.

To prevent dust from collecting on the fiber optic lens, keep the dust covers on the ports at all times when they are not in use. To clean a fiber optic lens when it becomes dirty, see "Cleaning dirty fiber optic cables" on page 95.

Damaged Transceiver Due to Excessive Insertion Force

The ATM specification for insertion force on the connector into an ATM SC receptacle is 3.5 lbs. However, it is possible to exert up to 30 lbs. of insertion force on the transceiver if you are too forceful while inserting the SC connector into the receptacle. This can cause failure of the transceiver's mechanical joints, permanently damaging the part and disabling the port.

When inserting connectors into the ATM ports, gently insert the SC connector into the receptacle until you hear the connector click into place. Use only enough force to engage the connector in the receptacle - no more than 3.5 lbs. This will avoid damage to the transceiver.

Downloaded from www.Manualslib.com manuals search engine

Multi-mode Fiber Standards

The MMF-PMD standards define the requirements for an ATM cable plant to support an interstation distance of up to 2 kilometers (1.25 miles) of multi-mode fiber. The cable plant includes all fiber optic components between any two communicating ATM devices and their associated "station-to-network" connectors at each end.

To determine whether the cable plant complies with the MMF-PMD standard, do the following:

1. Compare the specifications of the fiber you are using to standard specifications, as described in Table 25 and Table 26.
2. If unlike fibers are mated in the cable plant, calculate insertion losses to see whether they exceed the maximum attenuation value allowed for a link, as described in Table 27 and Table 28.
3. Verify that the fiber's modal bandwidth is within an acceptable range for the length of the link, as described on page 115.

The following sections describe each of these steps and give examples.

Comparing Fiber to Specifications

Compare the specifications of the fiber you are using to those in the following tables. If the fiber does not meet the specifications, use a different fiber or contact 3Com's Technical Support.

The fiber you use must meet the specifications listed in Table 25, which describes the standard set forth in MMF-PMD. Table 26 describes 62.5/125 cable, commonly sold as "ATM Spec," which meets all the requirements of the MMF-PMD standard.

Table 25 Standard Multi-mode Fiber Specification

Specification	Description
Core	62.5 µm diameter
Cladding	125 µm diameter nominal
	122 µm minimum
	128 µm maximum
Numerical aperture	0.275
Maximum attenuation	11 dB* (1dB allowed for reflection and dispersion penalties.)
Modal bandwidth	500 MHz. km

Downloaded from www.Manualslib.com manuals search engine

Table 25 Standard Multi-mode Fiber Specification (continued)

Maximum distance between nodes	2 km
Output power (from transmitter)	19 dB minimum
	14 dB maximum
Receive power	30 dB minimum sensitivity
	14 dB maximum sensitivity

*Maximum attenuation includes cable attenuation and the loss induced by other components such as connectors, splices, and the mating of unlike fiber types. Although some 2 km cable plants have a total attenuation of less than 11.0 dB, the 2 km interstation distance must be maintained to comply with modal bandwidth requirements.

Table 26 Alternate Multi-mode Fiber Types

Core (μm)	Cladding (μm)	Numerical Aperture
50	125	0.20
50	125	0.22
85	125	0.28
100	140	0.29

Calculating Insertion Losses for Unlike Fibers

If unlike fibers are mated in the cable plant, calculate insertion losses to be certain that the cable plant does not exceed the maximum attenuation value listed in Table 25. To calculate the insertion loss, consider the types of fiber in the cable plant and the connectors or splices used to join them. Compare the result to the maximum attenuation value listed in Table 25. If the result is greater than the value in the table, use only like fibers in the cable plant.

Refer to Table 27 for the insertion losses of the fibers themselves. Use Table 28, which lists the losses for connectors, cables, and splices, if the specifications for these components are not available.

Use Table 27 for fiber-to-fiber connections only, not for power launched from a transmitter.

Downloaded from www.Manualslib.com manuals search engine

Table 27 Insertion Losses for Mating Unlike Fiber Types - Transmitting Fiber

Receiving Fiber Size	Numerical Aperture	50 µm	50 µm	62.5 µm	85 µm	100 µm
		0.20	0.22	0.275	0.26	0.29
50 µm	0.20	0.0	0.4	2.2	3.8	5.7
50 µm	0.22	0.0	0.0	1.6	3.2	4.9
62.5 µm	0.275	0.0	0.0	0.0	1.0	2.3
85 µm	0.26	0.0	0.0	0.1	0.0	0.8
100 µm	0.29	0.0	0.0	0.0	0.0	0.0

Table 28 Typical Losses for Typical Connectors, Cables, and Splices

Type of Insertion	Loss
SC connector	.6 dB
ST connector (ceramic)	.6 dB
ST connector (plastic)	1.0 dB
ST connector (stainless steel)	.7 dB
62.5/125 cable	1.0 to 3.0 dB maximum per km, depending on cable quality (nominal 2.0 dB)
8/125 cable	.5 dB/km (AT&T Lightguide)
Bypass switch (currently not available in single mode)	2.5 dB maximum
Fusion splice	1 to 3 dB depending on type used (use .3 dB)

Example

Suppose that a link consisting of one km of 62.5/125 fiber with a maximum attenuation rating of 1.75 dB/km is transmitting into one km of 50/125 fiber with a maximum attenuation rating of 3 dB/km. The fibers are joined using a fusion splice rated at 0.3 dB and the link contains one in-line ST connector rated at 0.6 dB.

The following calculation would arrive at the link loss attenuation value for this linked fiber:

62.5µm cable loss	+ 50µm cable loss	+ splice loss	+ ST connector loss	+ insertion loss*	= Total link attenuation
1 km(1.75 dB/km)	+1 km(3 dB/km)	+0.3 dB	+0.6 dB	+2.2 dB	=7.85 dB

* for mating unlike fiber types

Downloaded from www.Manualslib.com manuals search engine

Because the resulting value, 7.85, does not exceed the maximum attenuation value, no adjustments are needed in the types of fibers joined or how they are connected. The link meets all of the specifications of the MMF-PMD.

Verifying Modal Bandwidth

The bandwidth of an optical fiber is the lowest frequency where the magnitude of the baseband frequency response has decreased by 3 dB compared to the magnitude at zero frequency. Bandwidth for multi-mode fiber is referred to as modal bandwidth because it varies based on the modal field (or core diameter) of the fiber. Modal bandwidth is specified in units of MHz • km, which indicates the amount of bandwidth supported by the fiber for a one km distance.

The modal bandwidth specified in Table 25 is 500 MHz • km, which allows the cable plant to support end-to-end bandwidth of 250 MHz at the maximum 2 km distance. As a check, use the following formula to verify that the bandwidth of the fiber is within an acceptable range:

n MHz • km / xkm = y MHz

In this formula, *n* is the amount of bandwidth available according to the fiber specification. Divide this number by the total length *x* of the fiber in kilometers. The result is the modal bandwidth *y*, measured in MHz.

If the result is lower than 250 MHz, the link may increase bit errors. To reduce the likelihood of bit errors, shorten the length of the fiber or use different fiber until the result of the calculation reaches 250 MHz.

Example. Cable with a modal bandwidth of 500 MHz • km will have 250 MHz of bandwidth at 2 km:

(500 MHz • km) / 2 km = 250 MHz

The same cable would have 500 MHz of bandwidth at 1 km. A fiber cable with a bandwidth specification of 200 MHz • km would have only 100 MHz of bandwidth at 2 km, which would not support ATM. In this case, another type of fiber would be required.

Single Mode Fiber Standards

The SMF-PMD standard defines the requirements for an ATM cable plant to support a connection distance of up to 14.4 kilometers (8.6 miles) of single mode fiber. The cable plant includes all fiber optic components

Downloaded from www.Manualslib.com manuals search engine

between any two communicating ATM devices and their connectors at each end.

To determine whether the cable plant complies with the SMF-PMD standard, do the following:

1 Compare the specifications of the fiber you are using to standard specifications, as described in Table 29.

2 If you mix equipment supporting Category 1 and Category 2, verify the maximum attenuation between the equipment, as described in Table 30.

The following pages describe each of these steps and give examples.

Comparing Fiber to Specifications

Compare the specifications of the fiber you are using to those in Table 29. If the fiber does not meet the specifications, use a different fiber or contact 3Com Technical Support.

The single mode PMD specification (SMF-PMD) defines two optical power categories: Category 1 and Category 2. These categories refer to the optical power that must be launched into the fiber by the transmitter or detected by the receiver. 3Com currently supports only Category 1 single mode fiber.

The specifications for the standard single mode fiber are listed in Table 29. Refer to the Category 1 specifications in this table for fiber connecting 3Com equipment. For fiber used with Category 2 equipment from another vendor, refer to the Category 2 specifications.

The cable plant for a Category 2 implementation must have a minimum loss of 15.0 dB. In a Category 2 implementation, minimum cable plant losses are required to avoid saturating (blinding) the receiver.

Table 29 Single Mode Fiber Specifications

Category	Specifications	Descriptions
Both Categories	Core	8 to 10 µm
	Cladding	125 µm (±2 µm)

Downloaded from www.Manualslib.com manuals search engine

Table 29 Single Mode Fiber Specifications (continued)

Category 1	Output power	14 dB minimum
	(from transmitter)	8 dB maximum
	Receive power	32 dB minimum
		8 dB maximum
	Maximum distance* between ATM devices	14.4 km
	Maximum attenuation**	10 dB (1 dB allowed for reflections and dispersion penalties)
Category 2***	Output power	4 dB minimum
	(from transmitter)	0 dB maximum
	Receive power	37 dB minimum
		15 dB maximum
	Maximum distance* between nodes	58.6 km
	Maximum attenuation**	32 dB (1 dB allowed for reflections and dispersion penalties)

* Maximum distances assume cable with one splice every 2.2 km with 0.3 dB loss each, and with no patch panels or mechanical splices.

** Maximum attenuation includes cable attenuation and the loss induced by other components such as connectors, splices, and the mating of unlike fiber types.

***Category 2 based on FDDI information, no ATM specific information yet.

Downloaded from www.Manualslib.com manuals search engine

Verifying Maximum Attenuation for Mixed Fibers

If you mix Category 1 and Category 2 receivers and transmitters, use Table 30 to verify the maximum attenuation for each possible combination.

Table 30 Acceptable Cable Plants for Combination of Categories 1 and 2

Output Category	Input Category	Minimum Loss (dB)	Maximum Attenuation (dB)
1	1	0.0	10.0
1*	2*	1.0	16.0
2	1	14.0	26.0
2	2	15.0	32.0

*This combination is dispersion-limited rather than loss-limited. The expected maximum length is approximately 35 km.

Example. If a Category 2 transmitter is outputting to a Category 1 receiver, the maximum attenuation is 26.0.

DS-3 Coax Cables

Connect the CoreBuilder 7000 DS-3 interface by a 75 Ohm coaxial cable that complies with DS-3 standards. The maximum cable length is 450 feet. To connect the DS-3 interface:

1. Prepare two coax cables - one for Tx and one for Rx. You may want to mark the ends of the cables to identify them easily.
2. Connect both cables to the DS-3 BNC connectors on the CoreBuilder interface. Make sure to connect Rx and Tx cables according to what is indicated on the interface front panel.
3. Connect the two cables at the other end according to the opposite of the first connection Rx to Tx and Tx to Rx.

Ethernet Cabling

The Ethernet port of the CoreBuilder allows you to connect the CoreBuilder to an Ethernet network for Network Management Station (NMS) connectivity (such as Transcend™). The Ethernet port is a standard RJ-45 connection of a terminal side.

Follow these guidelines for 10BASE-T cabling:

- Use only copper, unshielded twisted-pair (UTP) wiring. Do not use flat, multiconductor cable (for example, silver satin), which is often identified by solid colors such as red, green, yellow, or black.

Downloaded from www.Manualslib.com manuals search engine

- Use two twisted-pairs for each link.
- Use twisted-pair wire that is 22-26 AWG (0.5 millimeter) in diameter.
- Use twisted-pair wire with an impedance between 85 and 115 ohms.
- Make sure that the maximum twisted-pair link length from the system to any potential workstation location is 100 meters (328 feet).

Cable Pinouts

Management connections may be established with a direct cable link to a PC-AT serial port, or via modem. The following tables detail cable pinouts for 9 and 25 pin PC-AT links, and for a modem connection.

CoreBuilder 7000 Serial Port

The CoreBuilder 7000 provides a standard DB-9 connector for management connections (refer to Figure 17). Table 31 details the pinout and functions for this connector. The CoreBuilder 7000 plays the standard role of a DCE.

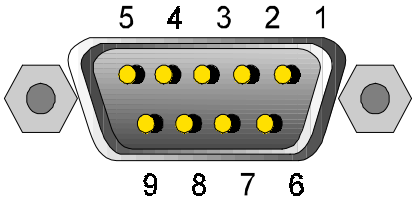


Figure 17 Serial Port Pinouts

Downloaded from www.Manualslib.com manuals search engine

Table 31 Serial Port Pinout and Their Functions

Pin	Signal	Meaning
1	RTS	Request to Send
2	TxD	Transmit Data
3	RxD	Receive Data
4	DSR	Data Set Ready
5	GND	Ground
6	DTR	Data Terminal Ready
7	CTS	Clear to Send
8	RTS	Request to Send
9	NC	Not Connected
Shell		Protective Ground

Table 32 correlates the cable pinouts between the CoreBuilder 7000 and a 9-pin and 25-pin PC-AT serial interface. Unspecified pins are unused.

Table 32 Cable Pinouts To a 9-Pin and 25-Pin Serial Interfaces

CoreBuilder 7000 Serial Port 9-pin Male		To PC-AT Serial Port 9-pin Female		To PC-AT Serial Port 25-pin Female	
Screen	Shell	Shell	Only req. if screen	Shell	Only req. if screen
TxD	2	2	RxD	3	RxD
RxD	3	3	TxD	2	TxD
GND	5	5	GND	7	GND
RTS	1				
CTS	7	7	RTS	4	RTS
RTS	8	8	STS	5	CTS
DSR	4	4	DTR	20	DTR
DTR	6	6	DSR	6	DSR

Table 33 correlates cable pinouts between the CoreBuilder 7000 and a modem interface.

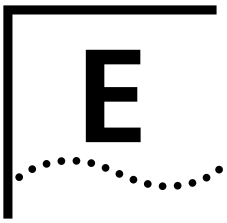
Downloaded from www.Manualslib.com manuals search engine

Table 33 Cable Pinouts to a Modem Interface

CoreBuilder 7000 Serial Port 9-pin Male		**To Modem Port 25-pin Male**	
Screen	Shell	Shell	Screen
TxD	2	2	RxD
RxD	3	3	TxD
RTS	8	4	CTS
CTS	7	5	RTS
DSR	4	6	DTR
GND	5	7	GND
RTS	1	8	DCD
DTR	6	20	DSR

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine



TECHNICAL SUPPORT

3Com provides easy access to technical support information through a variety of services. This appendix describes these services.

Information contained in this appendix is correct at time of publication. For the most recent information, 3Com recommends that you access the 3Com Corporation World Wide Web site.

Online Technical Services

3Com offers worldwide product support 24 hours a day, 7 days a week, through the following online systems:

- World Wide Web site
- 3Com Knowledgebase Web Services
- 3Com FTP site
- 3Com Bulletin Board Service (3Com BBS)
- 3Com Facts℠ Automated Fax Service

World Wide Web Site

To access the latest networking information on the 3Com Corporation World Wide Web site, enter this URL into your Internet browser:

`http://www.3com.com/`

This service provides access to online support information such as technical documentation and software, as well as support options that range from technical education to maintenance and professional services.

3Com Knowledgebase Web Services

This interactive tool contains technical product information compiled by 3Com expert technical engineers around the globe. Located on the World Wide Web at **`http://knowledgebase.3com.com`**, this service gives all 3Com customers and partners complementary, round-the-clock access to technical information on most 3Com products.

Downloaded from www.Manualslib.com manuals search engine

3Com FTP Site

Download drivers, patches, software, and MIBs across the Internet from the 3Com public FTP site. This service is available 24 hours a day, 7 days a week.

To connect to the 3Com FTP site, enter the following information into your FTP client:

- Hostname: **`ftp.3com.com`**
- Username: **`anonymous`**
- Password: **`<your Internet e-mail address>`**

You do not need a user name and password with Web browser software such as Netscape Navigator and Internet Explorer.

3Com Bulletin Board Service

The 3Com BBS contains patches, software, and drivers for 3Com products. This service is available through analog modem or digital modem (ISDN) 24 hours a day, 7 days a week.

Access by Analog Modem

To reach the service by modem, set your modem to 8 data bits, no parity, and 1 stop bit. Call the telephone number nearest you:

Country	Data Rate	Telephone Number
Australia	Up to 14,400 bps	61 2 9955 2073
Brazil	Up to 28,800 bps	55 11 5181 9666
France	Up to 14,400 bps	33 1 6986 6954
Germany	Up to 28,800 bps	4989 62732 188
Hong Kong	Up to 14,400 bps	852 2537 5601
Italy	Up to 14,400 bps	39 2 27300680
Japan	Up to 14,400 bps	81 3 5977 7977
Mexico	Up to 28,800 bps	52 5 520 7835
P.R. of China	Up to 14,400 bps	86 10 684 92351
Taiwan, R.O.C.	Up to 14,400 bps	886 2 377 5840
U.K.	Up to 28,800 bps	44 1442 438278
U.S.A.	Up to 53,333 bps	1 847 262 6000

Downloaded from www.Manualslib.com manuals search engine

Access by Digital Modem

ISDN users can dial in to the 3Com BBS using a digital modem for fast access up to 64 Kbps. To access the 3Com BBS using ISDN, call the following number:

1 847 262 6000

3Com Facts Automated Fax Service

The 3Com Facts automated fax service provides technical articles, diagrams, and troubleshooting instructions on 3Com products 24 hours a day, 7 days a week.

Call 3Com Facts using your Touch-Tone telephone:

1 408 727 7021

Support from Your Network Supplier

If you require additional assistance, contact your network supplier. Many suppliers are authorized 3Com service partners who are qualified to provide a variety of services, including network planning, installation, hardware maintenance, application training, and support services.

When you contact your network supplier for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

If you are unable to contact your network supplier, see the following section on how to contact 3Com.

Support from 3Com

If you are unable to obtain assistance from the 3Com online technical resources or from your network supplier, 3Com offers technical telephone support services. To find out more about your support options, call the 3Com technical telephone support phone number at the location nearest you.

Downloaded from www.Manualslib.com manuals search engine

When you contact 3Com for assistance, have the following information ready:

- Product model name, part number, and serial number
- A list of system hardware and software, including revision levels
- Diagnostic error messages
- Details about recent configuration changes, if applicable

Here is a list of worldwide technical telephone support numbers:

Country	Telephone Number	Country	Telephone Number
Asia, Pacific Rim			
Australia	1 800 678 515	P.R. of China	10800 61 00137 or
Hong Kong	800 933 486		021 6350 1590
India	+61 2 9937 5085	Singapore	800 6161 463
Indonesia	001 800 61 009	S. Korea	
Japan	0031 61 6439	From anywhere in S. Korea:	00798 611 2230
Malaysia	1800 801 777	From Seoul:	(0)2 3455 6455
New Zealand	0800 446 398	Taiwan, R.O.C.	0080 611 261
Pakistan	+61 2 9937 5085	Thailand	001 800 611 2000
Philippines	1235 61 266 2602		
Europe			
From anywhere in Europe, call:	+31 (0)30 6029900 phone +31 (0)30 6029999 fax		
Europe, South Africa, and Middle East			
From the following countries, you may use the toll-free numbers:			
Austria	0800 297468	Netherlands	0800 0227788
Belgium	0800 71429	Norway	800 11376
Denmark	800 17309	Poland	00800 3111206
Finland	0800 113153	Portugal	0800 831416
France	0800 917959	South Africa	0800 995014
Germany	0800 1821502	Spain	900 983125
Hungary	00800 12813	Sweden	020 795482
Ireland	1800 553117	Switzerland	0800 55 3072
Israel	1800 9453794	U.K.	0800 966197
Italy	1678 79489		
Latin America			
Argentina	AT&T +800 666 5065	Mexico	01 800 CARE (01 800 2273)
Brazil	0800 13 3266	Peru	AT&T +800 666 5065
Chile	1230 020 0645	Puerto Rico	800 666 5065
Colombia	98012 2127	Venezuela	AT&T +800 666 5065
North America	1 800 NET 3Com (1 800 638 3266) Enterprise Customers: 1 800 876-3266		

Downloaded from www.Manualslib.com manuals search engine

Returning Products for Repair

Before you send a product directly to 3Com for repair, you must first obtain an authorization number. Products sent to 3Com without authorization numbers will be returned to the sender unopened, at the sender's expense.

To obtain an authorization number, call or fax:

Country	Telephone Number	Fax Number
Asia, Pacific Rim	+ 65 543 6500	+ 65 543 6348
Europe, South Africa, and Middle East	+ 31 30 6029900	+ 31 30 6029999
Latin America	1 408 326 2927	1 408 326 3355
From the following countries, you may call the toll-free numbers; select option 2 and then option 2:		
Austria	0800 297468	
Belgium	0800 71429	
Denmark	800 17309	
Finland	0800 113153	
France	0800 917959	
Germany	0800 1821502	
Hungary	00800 12813	
Ireland	1800553117	
Israel	1800 9453794	
Italy	1678 79489	
Netherlands	0800 0227788	
Norway	800 11376	
Poland	00800 3111206	
Portugal	0800 831416	
South Africa	0800 995014	
Spain	900 983125	
Sweden	020 795482	
Switzerland	0800 55 3072	
U.K.	0800 966197	
U.S.A. and Canada	1 800 NET 3Com (1 800 638 3266) Enterprise Customers: 1 800 876 3266	1 408 326 7120 (not toll-free)

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

GLOSSARY

A

ABR Available Bit Rate. An ATM layer service category for which the limiting ATM layer transfer characteristics provided by the network may change subsequent to connection establishment.

address prefix A string of 0 or more bits up to a maximum of 152 bits that is the lead portion of one or more ATM addresses.

AFI Authority and Format Identifier, This identifier is part of the network level address header.

aggregated information Common information, such as the name of the group, but not the individual members.

aggregated list A generalized list which contains the summary of the reachable addresses for its group.

aggregation token A number assigned to an outside link by the border nodes at the ends of the outside link. The same number is associated with all uplinks and induced uplinks associated with the outside link. In the parent and all higher-level peer group, all uplinks with the same aggregation token are aggregated.

Allowed Cell Rate (ACR) An ABR service parameter, ACR is the current rate in cells/sec at which a source is allowed to send.

alternate routing A mechanism that supports the use of a new path after an attempt to set up a connection along a previously selected path fails.

Anycast The ability to allow an application to request a P2P connection over a single ATM end system that is part of an ATM group.

API Application Program Interface: API is a programmatic interface used for interprogram communications or for interfacing between protocol layers.

Downloaded from www.Manualslib.com manuals search engine

ATM Asynchronous Transfer Mode. A transfer method used for LAN and WAN. ATM carries voice, video, and data at speeds up to 2.2 Gbps and can integrate geographically distant disparate networks. Also called cell relay.

ATM Adaptation Layer (AAL) A set of protocols that translate user traffic from higher-layer protocols into ATM format.

ATM Address Defined in the UNI Specification as 3 formats, each having 20 bytes in length including country, area and end-system identifiers.

ATM Forum A consortium of vendors, carriers, and users formed to expedite industry agreement on ATM interfaces.

ATM Layer The part of the BISDN protocol stack that handles most of the ATM routing and processing.

ATM Member An alias given to an ATM address on a specific port in order to avoid typing in the ATM address 20 octets long, proprietary implementation.

B

backbone The main segment of a campus network, to which are attached department networks, or ribs.

border node A logical node that is in a specified peer group, and has at least one link that crosses the peer group boundary.

broadcasting A common method of information transmission in which every port on the network receives the packet being sent, though only the port with the proper address passes it on to the user.

bridge Device connecting two networks which filters and forwards data between the networks according to their destination address.

BUS Broadcast and Unknown Server. A BUS is that set of functions implemented in an ATM network that provides LAN-to-LAN transmission support while a LAN connection is being established.

Downloaded from www.Manualslib.com manuals search engine

C

call An association between two or more users or between a user and a network entity that is established by the use of network capabilities. This association may have zero or more connections.

cell An ATM Layer protocol data unit (PDU) characterized by fixed, rather than variable, length payloads.

cell delay variation A quantification of cell clumping for a connection. The cell clumping CDV (y_k), is defined as the difference between a cell's expected reference arrival time (c_k) and its actual arrival time (a_k). The expected reference arrival time (c_k) of cell k of a specific connection is $max[ck-1+T,ak]$. T is the reciprocal of the negotiated peak cell rate.

cell loss ratio In a network/network element, cell loss ratio is (1-x/y), where y is the number of cells that arrive in an interval at the ingress of the network/network element; and x is the number of these y cells that leave at the egress of the network/network element.

CoreBuilder 7000 The 3Com CoreBuilder 7000/7000HD switch is a high-performance, modular ATM switch.

CLP Cell Loss Priority. A bit in the ATM cell header indicating that if there is a need to discard a cell, the cell with the CLP bit marked is to be discarded.

CLR Cell Loss Ratio. CLR is a negotiated QoS parameter and acceptable values are network specific. The objective is to minimize CLR provided the end-system adapts the traffic to the changing ATM layer transfer characteristics. The Cell Loss Ratio is defined for a connection as: Lost Cells/Total Transmitted Cells.

collision Overlapping transmission of two or more nodes onto media. All data is unusable.

connection An ATM connection consists of the concatenation of ATM Layer links in order to provide an end-to-end information transfer capability to access points.

connectionless communications A form of packet-switching that relies on global addresses in each packet rather than on predefined virtual circuits.

Downloaded from www.Manualslib.com manuals search engine

connection-oriented communications A form of packet-switching that requires a predefined circuit from source to destination to be established before data can be transferred.

crankback A mechanism used by ATM networks when a connection setup request is blocked. The path is rolled back to an intermediate node, which attempts to discover another path to the final destination.

CTD Cell Transfer Delay. This is defined as the elapsed time between a cell exit event at measurement point 1 (e.g., at the source UNI) and the corresponding cell entry event at measurement point 2 (e.g.,the destination UNI) for a particular connection. The cell transfer delay between two points is the sum of the total inter-ATM node transmission delay and the total ATM node processing delay.

D

database synchronization PTSE information is flooded on a continuous basis, until each node in the peer group has the same information in its database.

DCE Data Communications Equipment. The equipment providing functions that establish, maintain and terminate a data transmission connection.

DTE Data Terminal Equipment. The equipment connected to the common carrier communications facility. The DTE is typically a computer system or terminal.

DTL Designated Transit List. A list of node and optionally link IDs that completely specify a path across a single PNNI peer group.

E

E.164 A public network addressing standard utilizing up to a maximum of 15 digits. ATM uses E.164 addressing for public network addressing.

end system / end station A system where an ATM connection is terminated or initiated. An originating end system initiates the ATM connection, and a terminating end system terminates the ATM connection. OAM cells may be generated and received.

EFCI Explicit Forward Congestion Indication. EFCI is a congestion notification mechanism that the ATM layer service user may make use of to improve the utility that can be derived from the ATM layer. The ABR

Downloaded from www.Manualslib.com manuals search engine

quality of service class makes use of explicit forward congestion indication.

Ethernet A CSMA/CD, 10 Mbps, local area data network, developed by Xerox Corporation. It is one of the most popular baseband LANs in use.

ELAN name The name assigned an ELAN (Emulated Local Area Network).

ESI End System Identifier. This identifier distinguishes multiple nodes at the same level in case the lower peer group is partitioned.

external clock Clock that comes through an RX channel into an on-board port.

external clock source port The on-board port that supplies the external synchronization clock, which is distributed to all other on-board 8-port ports. Only a single port of this type can exist in a box. Only on-board ports can function as an external clock source port.

F

flooding This is an advertising mechanism in PNNI and ensures that each node maintains an identical topology database.

foreign address An address that does not match any of a given node's summary addresses.

H

horizontal links A link between two logical nodes that belong to the same peer group.

header Protocol control information located at the beginning of a protocol data unit.

HEC Header Error Control. Using the fifth octet in the ATM cell header, ATM equipment may check for an error and correct the contents of the header. The check character is calculated using a CRC algorithm allowing a single bit error in the header to be corrected or multiple errors to be detected.

hello packet A type of PNNI routing packet that is exchanged between neighboring logical nodes.

I

IEEE 802.3 IEEE standard for Ethernet local area networks.

Downloaded from www.Manualslib.com manuals search engine

IEEE 802.1D IEEE standard for bridging.

IFC Communications Interface card communications is the communications protocol between the switch card and the installed interface cards.

in-band Transmission of auxiliary information, e.g., management messages over the media also used by the system users.

interface card Up to four interface cards can be placed in the CoreBuilder 7000. Each interface card contains four ATM ports for connection to network devices.

internal clock Clock that comes from the local clock on the PB.

IP Internet Protocol. The protocol governing packet forwarding within the Transmission Control Protocol/Internet Protocol (TCP/IP) suite of standards developed and used on the Internet.

IP address Internet Protocol address. A unique identifier for a machine attached to a network made up of two or more interconnected local area or wide area networks.

L

LAN Local Area Network. A data communications network spanning a limited geographical area, such as a single building or campus. It provides communication between computers and peripherals. LANs are distinguished by their small geographical size, high data rate, and low error rate.

LANE LAN Emulation. The set of services, functional groups and protocols which provide for the emulation of LANs utilizing ATM as a backbone to allow connectivity among LAN and ATM attached end stations.

LE LAN Emulation. See LANE.

LEC LAN Emulation Client. The ATM Forum defined specifications in support of LAN-to-LAN connectivity called LAN Emulation. LEC defines that set of functions implemented in a LAN edge device to interface with an ATM network in support of LAN Emulation.

LEC ID LAN Emulation Client Identifier: This identifier, contained in the LAN Emulation header, indicates the ID of the ATM host or ATM-LAN bridge. It is unique for every ATM Client.

Downloaded from www.Manualslib.com manuals search engine

LECS LAN Emulation Configuration Server. This is the set of functions that provides an edge device with information regarding the location of the other LAN Emulation Services, that is LES and BUS.

LES LAN Emulation Server provides address resolution for the LECs within an Emulated LAN. An LES receives an IP address from its own tables or by querying the other LECs, and returns it to the requesting LEC.

level indicator The level indicator specifies the exact number of significant bits that are used for the peer group ID and can range from 0 to 104.

LM Local management of a network device via a connected terminal.

Local Management Application (LMA) menu system The LMA menu system is a set of command menus organized in a hierarchic, top-down fashion. Each command menu contains a numbered list of menu items. Each menu item has a three-letter mnemonic identifier and a short description of the item. There are two kinds of menu items: commands that display another, lower-level, command menu (*submenu*) and commands that perform a specific administrative task.

logical group nodes A logical group node that represents a lower level peer group as a single point for purposes of operating at one level of the PNNI routing hierarchy.

logical link An abstract representation of the connectivity between two logical nodes. This includes individual physical links, individual virtual path connections, and parallel physical links and/or virtual path connections.

logical node An abstract representation of a peer group or a switching system as a single point.

logical uplink Any link between the lowest level hierarchy and the upper levels of hierarchy.

LOS Loss of Signal. A condition at the receiver or a maintenance signal transmitted in the PHY overhead indicating that the receiving equipment has lost the received signal. This is used to monitor the performance of the PHY layer.

LUNI LAN Emulation User to Network Interface. The standardized interface between a LE client and a LE server (LES, LECS and BUS).

Downloaded from www.Manualslib.com manuals search engine

M

MaxCR Maximum Cell Rate. This is the maximum capacity usable by connections belonging to the specified service category.

MIB Management Information Base. A database of network management information that describes the specifics of individual network components.

multicasting The transmit operation of a single PDU by a source interface where the PDU reaches a group of one or more destinations.

multiplexing A function within a layer that interleaves the information from multiple connections into one connection.

N

native addresses An address that matches one of a given node's summary addresses.

neighbor node A node that is directly connected to a particular node via a logical link.

NMS Network Management System. An entity that implements functions at the Network Management Layer. It may also include Element Management Layer functions. A Network Management System may manage one or more other Network Management Systems.

NNI Network-to-Network Interface. The interface between two network nodes.

O

octet A term for eight (8) bits that is sometimes used interchangeably with "byte".

OSPF Open Shortest Path First. A link-state routing algorithm that is used to calculate routes based on the number of routers, transmission speed, delays and route cost.

outside link A link to an outside node.

Operation and Maintenance cell (OAM) A cell that contains ATM LM information. It does not form part of the upper layer information transfer.

Downloaded from www.Manualslib.com manuals search engine

out-of-band Transmission of auxiliary information e.g., management messages, over a medium other than that used by the system users.

P

peer group A set of logical nodes which are grouped for purposes of creating a routing hierarchy. PTSEs are exchanged among all members of the group.

peer group leader A node which has been elected to perform some of the functions associated with a logical group node.

physical link Any connection between two nodes in the lowest level hierarchy.

PNNI Routing Control Channel VCCs used for the exchange of PNNI routing protocol messages.

PNNI Private Network to Network Interface. A routing information protocol that enables extremely scalable, full function, dynamic multi-vendor ATM switches to be integrated in the same network.

peer group A set of logical nodes which are grouped for purposes of creating a routing hierarchy. PTSEs are exchanged among all members of the group.

point-to-multipoint call A one-way call or connection that has only one source, but may have many destinations.

point-to-point call A two-way call or connection that has one source and one destination.

Protocol Data Unit (PDU) A unit of data specified in a layer protocol and consisting of protocol control information and layer user data.

PTSE PNNI Topology State Element. A collection of PNNI information that is flooded among all logical nodes within a peer group.

PVC Permanent Virtual Connection. A basic connection method that requires the user to define each connection manually.

Q

QoS (Quality of Service) Quality of service is defined on an end-to-end basis in terms of the following attributes of the end-end-to-end ATM connection: Cell Loss Ration, Cell Transfer Delay and Cell Delay Variation.

Downloaded from www.Manualslib.com manuals search engine

Quality of Service (QoS) metrics Parameters that are defined by the network manager and include information on bandwidth, guaranteed cell delay, jitter, and other performance options available for establishing a new ATM connection.

R

reachability information A list of reachable addresses for any one node.

router A device that connects two remote networks by selectively forwarding messages between them. A router differs from a bridge and a gateway in that it selectively forwards information between the networks. Routers can be implemented in pairs, or a router may communicate directly with a computer.

RS-232 serial port Use of this port changes the parallel arrangement of data within computers to the serial (one after the other) form used on data transmission links. This port can be used for dedicated local management access.

S

SAR Segmentation and Reassembly. A method of breaking up arbitrarily sized packets.

scope A scope defines the level of advertisement for an address. The level is a level of a peer group in the PNNI routing hierarchy.

server A computer that provides clients with application and network services. Servers are shared by multiple users.

source routing The selection of the correct path, by the PNNI.

SNMP Simple Network Management Protocol. A protocol originally designed to be used in managing TCP/IP internets. SNMP is presently implemented on a wide variety of computers and networking equipment and may be used to manage many aspects of network and end-station operation.

summary address An address prefix that tells a node how to summarize reachability information.

SuperStack II Switch 2700 3Com Ethernet-to-ATM switch used to connect Ethernet network devices to each other and to an ATM backbone.

Downloaded from www.Manualslib.com manuals search engine

SVC Switched Virtual Connection. A standard signaling protocol that automatically defines connections as they are needed, and discards them when complete.

switched virtual LAN A logical network consisting of several different LAN Emulation domains controlled through an intelligent management application.

switching module A CoreBuilder 7000 switching module found in the slot just under the power supply. An additional switching module can be used for redundancy. The switching module contains a control port, a management port and a service port.

synched external clock port Port that has been synchronized according to the external clock supported by the external clock source port. Only on-board 8-port ports can function as synched ports. Ports that are to be synched should be configured to internal clock mode.

T

topology database The database that describes the topology of the entire PNNI routing domain as seen by a node.

topology The physical or logical placement of stations on a network in relation to one another.

traffic management The aspect of the traffic control and congestion control procedures for ATM. ATM layer traffic control refers to the set of actions taken by the network to avoid congestion conditions. ATM layer congestion control refers to the set of actions taken by the network to minimize the intensity, spread and duration of congestion.

U

UBR Unspecified Bit Rate. UBR is an ATM service category which does not specify traffic related service guarantees. Specifically, UBR does not include the notion of a per-connection negotiated bandwidth. No numerical commitments are made with respect to the cell loss ration experienced by a UBR connection, or as to the cell transfer delay experienced by cells on the connection.

UNI User-Network Interface. An interface point between ATM end users and a private ATM switch, or between a private ATM switch and the public carrier ATM network defined by physical and protocol specifications per

Downloaded from www.Manualslib.com manuals search engine

ATM Forum UNI documents. The standard adopted by the ATM Forum to define connections between users or end stations and a local switch.

V

VBR Variable Bit Rate. An ATM Forum defined service category which supports variable bit rate data traffic with average and peak traffic parameters.

VC Virtual Channel. A communication channel that provides for the sequential unidirectional transport of ATM cells.

VCC Virtual Channel Connection. A concatenation of virtual channel links that extends between the points where the ATM service users access the ATM layer. The points at which the ATM cell payload is passed to, or received from, the users of the ATM layer for processing signify the endpoints of a VCC. VCCs are unidirectional.

VCI Virtual Channel Identifier. Part of the identifier of a particular virtual circuit in the ATM fabric.

VP Virtual Path. A unidirectional logical association or bundle of VCs.

VP Tunneling Virtual Path Tunneling. A virtual path which has been extended to include a signaling channel and an ILMI channel in addition to the call channels.

VPI Virtual Path Identifier. Part of the identifier of a particular virtual circuit in the ATM fabric.

W

WAN Wide Area Network. Data communications network spanning very large geographical areas.

Downloaded from www.Manualslib.com manuals search engine

INDEX

Numbers

10Base-T cabling 118
25-pin serial interface 120
3Com bulletin board service (3Com BBS) 124
3Com Knowledgebase Web Services 123
3Com URL 123
3ComFacts 125
4-port interface card
  installing 43
  LEDs 52
  power consumption 87
8-port interface card
  power consumption 87
9-pin serial interface 120

A

AC line frequency 98
AC protection 97
Admin vLAN management
  configuring 71
agency certifications 97
aggregated
  list 129
Asynchronous Transfer Mode
  cabling see ATM cabling
Asynchronous Transfer Mode (ATM)
  interface specifications 99
  standards supported 98
ATM addresses
  configuring 73
ATM cabling
  calculating insertion losses for unlike fibers 113
  caring for fiber optic transceivers 111
  DS-3 coax cables 118
  multi-mode fiber 112
  single-mode fiber 115
  verifying maximum attenuation for mixed fibers 118
  verifying modal bandwidth 115
ATM physical modules
  power consumption 87
ATM port
  configuring 57
ATM-layer port statistics
  display 74
attenuation
  link loss 114
  mixed fibers 118

B

bandwidth 138
bandwidth, modal 115
batch file
  running 82
  utilities 81
bulletin board service 124

C

cable pinouts
  25-pin serial interface 120
  9-pin serial interface 120
  modem interface 121
  serial port 119
cable plants 118
cables
  coaxial 118
  connecting 29
  identifying 110
  labeling 109
cabling
  10Base-T 118
  ATM cabling 110
  cable labeling and record keeping 109
  considerations 106
  Ethernet 118
  installing new cable 109
  pinouts 119
  requirements 109
  system plan 110
  wiring closet considerations 106
calculating
  power consumption 86
category 1
  acceptable cable plants 118

Downloaded from www.Manualslib.com manuals search engine

single mode fiber specifications 117
category 2
acceptable cable plants 118
single mode fiber specifications 117
changing UNI version 73
coaxial cable 118
DS-3 interface 41
comparing fiber to specifications
single-mode fiber 116
components
enclosure 17
fan 18
general 16
interface module 18
power supply 17
switching module 17
configuration data
downloading 75
uploading 76, 77
configuration files
organizing 76
configuring
Admin vLAN management 71
ATM addresses 73
ATM port 57
CoreBuilder 7000 family switch 55
FastBUS 63
interface type parameters 65
LECS address 62
network prefix 61, 73
PVC 73
SVC 73
virtual LAN 68
connecting
a port to an ATM optical interface 45
cables 29
the control terminal 46
to the Ethernet port 46
connection
DS-3 interface 118
management 119
control
connection 99
control terminal
connecting 46
troubleshooting 93
conventions
notice icons 10
text 10
CoreBuilder 7000 family switch
cabling requirements 109
configuring 55
installation and startup guide 12
installing 23
installing modules & connecting cables 29
management guide 12
operations guide 12
safety information 101
site requirements 105
system power on 49
troubleshooting 93
unpacking instructions 21
CoreBuilder 7000/7000HD
release notes 12
CoreBuilder 720X Ethernet/ATM interface cards
power consumption 87
current rating 98

D

damaged
equipment 102
transceiver 111
data types
uploading 76, 77
daughter cards 41
DS-3 41
E-3 42
DB-9 connector 119
diagnostics 49, 51
dirt on the fiber optic lens 111
display
ATM-layer port statistics 74
distribution rack
installation 26
mounting the CoreBuilder 7000 family switch 28
requirements 107
documentation
comments 14
related guides 12
dommage
causé à l'équipement 103
corporel 102
downloading
configuration data 75, 76
DS-3
connecting interface 45
daughter card 41
DS-3 interface
coaxial cable 41, 118
LED indicators 52
DS-3 status LEDs 53

E

Downloaded from www.Manualslib.com manuals search engine

E-3 daughter card 42
E-IISP 61
  interface type 65
  looping 135
  upgrading to PNNI 83
enable
  LECS 62
  LES 62
enclosure 17
environmental requirements 97
  safety 105
  specifications 105
equipment damage 102
Ethernet cabling 118
Ethernet port
  configuring 57
  connecting to 46

F

fan tray
  replacing 44
fans
  general 18, 48
  hot-swapping 44
  troubleshooting 94, 95
Fast Ethernet port
  configuring 57
fast setup 56
FastBUS
  configuring 63
fax service (3ComFacts) 125
fiber 110
  calculating insertion losses 113
  mating unlike types 114
  optic lens 111
  single mode 110
  single-mode standards 115
  transmitting 114
fiber compared to specifications
  single mode fiber 116
fiber optic power budget 45
fiber optic transceivers 111
  care 111
  cleaning 95
  damaged 111
flash utility 81
front panel
  indicators 49
  system status LEDs 50
functionality
  system 49
functions of serial port pinouts 120

G

general switch statistics 74
grounding
  distribution rack 105
  protective 105

H

hardware connections
  general 23
  power cord 47
hardware kit 25
hardware redundancy 35, 38
heat-related specifications 106
hole pattern for universal mounting 27
hot swappable switch card 19
hot-swapping
  fan tray 44
  power supply 31
  switching module 33
humidity
  operating 97
  specifications 105
  storage 97

I

IISP
  interface type 65
indicators 51
  front panel 49
  switching modules 49
input voltage options 98
installing
  4-port interface module 43
  CoreBuilder 7000 family switch 23
  distribution rack installation 26
  modules 29
  power supply 30
  safety precautions 23, 24
  switching module 32
  system and rack preparation 26
  table top 25
integrated fast setup 56
interface card
  connectors 99
  general 18
  troubleshooting 94
interface type parameters
  configuring 65
interface types
  E-IISP 65

Downloaded from www.Manualslib.com manuals search engine

IISP 65
PNNI 65
UNI 65
inventory 22

K

körperliche schäden 102

L

labeling cables 109
LAN emulation
configuration 62
typical client configuration 67
LANE redundancy 39
NMS-based setup 38
LECS
enabling 62
LECS address
configuring 62
LED
active 49
fail 49
power 49
system status 49
LED indicators 49
4-port interface card 51
DS-3 52
front panel 49
overview 51
switching modules 49
LED specifications
4-port interface card 98
switch module 98
LES
enabling 62
level indicator 135
link loss attenuation 114
LMA
logging in to 55
load mode 82
load sharing 86
logging in to LMA 55
looping 135

M

main switch module 35
status 35
management
connections 99, 119
connectors 99
mechanical requirements 107
Mesures de sécurité 24
MIBs 124
MIBs supported 98
mixed fibers, verifying maximum attenuation 118
modal bandwidth 115
mode
full setup 58
load 82
load-sharing 86
multiple-IP 75
operational 82
routing 61
single-IP 75, 77
modem interface 121
modules
installing 29
mounting hole pattern 27
mounting in the distribution rack 28
multi-mode fiber 110
alternative types 113
ATM cabling 112
comparing fiber to specifications 112
output power 113
receive power 113
specification 112
standards 112
multi-mode fiber link
OC-3 41
multiple-IP mode 75

N

Network Management Station
Ethernet cabling 118
network prefix
configuring 61, 73
network supplier support 125
NMS see Network Management Station
NMS-based LANE redundancy setup 38
node level 62

O

OC-3 multi-mode fiber link daughter card 41
online technical services 123
operational mode 82
optical interface connection 45
organizing configuration files 76
output power 113
overloading 86

Downloaded from www.Manualslib.com manuals search engine

P

peer group 62
physical dimensions 97
physical layer
  statistics 74
Physical Medium Dependent layer
  multi-mode fiber 110
  single mode fiber 110
pinouts for serial port 119
plugging in the unit 48
PMD see Physical Medium Dependent layer
PNNI 61
  interface type 65
  level indicator 135
  node level 62
  parameter section 62
  Routing Control Channel (RCC) 137
  upgrading from E-IISP 83
port cables
  troubleshooting 93
port interface card LEDs 52
power consumption
  4-port interface card 87
  8-port interface card 87
  ATM physical modules 87
  calculating 86
  CoreBuilder 720X Ethernet/ATM interface cards 87
power cord 47
power on
  diagnostics 51
  software loading 51
power requirements 85, 106
power supply
  general 17
  hot-swapping 31
  installing 30
  operation 86
  redundant 85, 90, 98
  required 89
  specifications 91, 98
  troubleshooting 94
  types 85
protective grounding 105
PVC
  configuring 73

R

rack preparation & installation 26
redundancy
  switch module hardware 35
  switching module 34
  verifying LANE setup 39
redundant
  switch card 19
redundant power supply 85, 90, 98
  hot-swapping 31
related documentation 12
requirements
  cabling 109
  cabling considerations 106
  distribution rack 107
  environmental 105
  mechanical 107
  power 85, 106
  safety 105
  site 105
returning products for repair 127
routing mode
  selecting 61
routing protocol
  selecting 61
RS-232 utilities 81
running batch file 82

S

safety precautions
  ambient temperature 23
  bodily harm 101
  equipment damage 102
  general 101
  internal power supply 23
  redundant power supply 24
  requirements 105
safety specifications 97
schäden am gerät 103
serial port
  cable pinouts 119
  function of pinouts 120
service connection 99
setting up
  switching module redundancy 34
setup
  fast 56
setup mode
  full 58
  selection 58
  switch 58
signaling
  statistics 74
Simple Network Management Protocol
  supported MIBs 98
single mode fiber link

Downloaded from www.Manualslib.com manuals search engine

OC-3 41
single-IP mode 75, 77
single-mode fiber
comparing fiber to specifications 116
standards 110, 115
site requirements
cabling considerations 106
distribution rack requirements 107
software
loading 51
specifications 97
ambient air temperature 105
category 1 single mode fiber 117
category 2 single mode fiber 117
environmental 105
heat related 106
multi-mode fiber 112
operating humidity 105
power 106
thermal 106
statistics
ATM layer 74
ATM-layer port 74
general switch 74
physical layer 74
signaling 74
viewing 74
summary of components 16
SVC
configuring 73
switch
hot swappable 19
redundant 19
statistics 74
switching module
general 17
hot-swapping 33
installing 32
LED indicators 49
redundancy setting up 34
switching module LEDs 50
description 50
system
power on 49
preparation for installation 26
system state
hardware fault 50
normal operation 50
power-up 50
software fault 50

T

table top installation 25
taking inventory 22
technical support
3Com Knowledgebase Web Services 123
3Com URL 123
bulletin board service 124
fax service 125
network suppliers 125
product repair 127
temperature
operating 97, 106
specifications 105
storage 97
wiring closet 106
thermal
recommendations 106
thermal rating 97
transceiver see fiber optic transceiver
transmitting fiber 114
troubleshooting
control terminal 93
fans 94, 95
general 93
interface card 94
port cables 93
power supply 94
typical insertion losses 114

U

UNI
changing version 73
interface type 65
universal mounting hole pattern 27
unpacking
general 21
taking inventory 22
uploading
configuration data 75, 77
configuration data type 79
selected data types 76
single configuration data type 78
URL 123
utilities
RS-232 batch file 81

V

ventilation
wiring closet 106
verifying
maximum attenuation for mixed fibers 118
modal bandwidth 115

Downloaded from www.Manualslib.com manuals search engine

setup 39
virtual LAN
chassis-wide 57
configuring 68
vorsichtsmaßnahmen 24

W

wiring closet
considerations 106
temperature 106
ventilation 106
World Wide Web (WWW) 123

Downloaded from www.Manualslib.com manuals search engine

Downloaded from www.Manualslib.com manuals search engine

3Com Corporation LIMITED WARRANTY

The duration of the warranty for the CoreBuilder 7000/7000HD Chassis and Switch Engine is: Enhanced One-year Limited —- return to factory for free repair. One year warranty with 90 days of Advance Hardware Replacement service, subject to availability.

The duration of the warranty for all other CoreBuilder 7000 Hardware Modules is: One Year limited — return to factory for free repair. Advance Hardware Replacement service is available for an additional fee, subject to availability.

HARDWARE

3Com warrants its hardware products to be free from defects in workmanship and materials, under normal use and service, for the following lengths of time from the date of purchase from 3Com or its authorized reseller:

Network Interface Cards	Lifetime
Other hardware products *unless otherwise specified above	1 year*
Spare parts and spares kits	90 days

If a product does not operate as warranted above during the applicable warranty period, 3Com shall, at its option and expense, repair the defective product or part, deliver to Customer an equivalent product or part to replace the defective item, or refund to Customer the purchase price paid for the defective product. All products that are replaced will become the property of 3Com. Replacement products may be new or reconditioned. Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

SOFTWARE

3Com warrants that the software programs licensed from it will perform in substantial conformance to the program specifications therefor for a period of ninety (90) days from the date of purchase from 3Com or its authorized reseller. 3Com warrants the media containing software against failure during the warranty period. No updates are provided. 3Com's sole obligation with respect to this express warranty shall be (at 3Com's discretion) to refund the purchase price paid by Customer for any defective software products, or to replace any defective media with software which substantially conforms to applicable 3Com published specifications. Customer assumes responsibility for the selection of the appropriate applications program and associated reference materials. 3Com makes no warranty or representation that its software products will meet Customer's requirements or work in combination with any hardware or applications software products provided by third parties, that the operation of the software products will be uninterrupted or error free, or that all defects in the software products will be corrected. For any third party products listed in the 3Com software product documentation or specifications as being compatible, 3Com will make reasonable efforts to provide compatibility, except where the non-compatibility is caused by a "bug" or defect in the third party's product.

YEAR 2000 WARRANTY

In addition to the Hardware Products Warranty and Software Products Warranty identified above, 3Com warrants that all Heritage 3Com products sold or licensed to Customer on and after January 1, 1998 that are date sensitive will continue performing properly with regard to such date data on and after January 1, 2000, provided that all other products used by Customer in connection or combination with the 3Com products, including hardware, software, and firmware, accurately exchange date data with the 3Com products, with the exception of those products identified at 3Com's Web site, http://www.3com.com/products/yr2000.html, as not meeting this standard. A product is considered a "Heritage 3Com product" if it is a member of a product family which was manufactured by 3Com prior to its merger with US Robotics Corporation. This Year 2000 limited warranty does not apply to Heritage US Robotics Corporation products. If it appears that any such product does not perform properly with regard to such date data on and after January 1, 2000, and Customer notifies 3Com before the later of April 1, 2000, or ninety (90) days after purchase of the product from 3Com or its authorized reseller, 3Com shall, at its option and expense, provide a software update which would effect the proper performance of such product, repair such product, deliver to Customer an equivalent product to replace such product, or if none of the foregoing is feasible, refund to Customer the purchase price paid for such product.

Any software update or replaced or repaired product will carry a Year 2000 Warranty for ninety (90) days or until April 1, 2000, whichever is later.

OBTAINING WARRANTY SERVICE

Customer must contact 3Com's Corporate Service Center or an Authorized 3Com Service Center within the applicable warranty period to obtain warranty service authorization. Dated proof of purchase may be required. Products returned to 3Com's Corporate Service Center must be pre-authorized by 3Com with a Return Material Authorization (RMA) number marked on the outside of the package, and sent prepaid and packaged appropriately for safe shipment, and it is recommended that they be insured. The repaired or replaced item will be shipped to Customer, at 3Com's expense, not later than thirty (30) days after receipt of the defective product by 3Com.

Dead- or Defective-on-Arrival. In the event a product completely fails to function or exhibits a defect in materials or workmanship within the first forty-eight (48) hours of installation but no later than thirty (30) days after the date of purchase, and this is verified by 3Com, it will be considered dead- or defective-on-arrival

Downloaded from www.Manualslib.com manuals search engine

(DOA) and a replacement shall be provided by advance replacement. The replacement product will normally be shipped not later than three (3) business days after 3Com's verification of the DOA product, but may be delayed due to export or import procedures. When an advance replacement is provided and Customer fails to return the defective product to 3Com within fifteen (15) days after shipment of the replacement, 3Com will charge Customer for the replacement product, at list price.

3Com shall not be responsible for any software, firmware, information, or memory data of Customer contained in, stored on, or integrated with any products returned to 3Com for repair, whether under warranty or not.

WARRANTIES EXCLUSIVE

IF A 3COM PRODUCT DOES NOT OPERATE AS WARRANTED ABOVE, CUSTOMER'S SOLE REMEDY FOR BREACH OF THAT WARRANTY SHALL BE REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING WARRANTIES AND REMEDIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES, TERMS, OR CONDITIONS, EXPRESS OR IMPLIED, EITHER IN FACT OR BY OPERATION OF LAW, STATUTORY OR OTHERWISE, INCLUDING WARRANTIES, TERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND SATISFACTORY QUALITY. 3COM NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT ANY OTHER LIABILITY IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE OR USE OF ITS PRODUCTS.

3COM SHALL NOT BE LIABLE UNDER THIS WARRANTY IF ITS TESTING AND EXAMINATION DISCLOSE THAT THE ALLEGED DEFECT IN THE PRODUCT DOES NOT EXIST OR WAS CAUSED BY CUSTOMER'S OR ANY THIRD PERSON'S MISUSE, NEGLECT, IMPROPER INSTALLATION OR TESTING, UNAUTHORIZED ATTEMPTS TO REPAIR OR MODIFY, OR ANY OTHER CAUSE BEYOND THE RANGE OF THE INTENDED USE, OR BY ACCIDENT, FIRE, LIGHTNING, OR OTHER HAZARD.

LIMITATION OF LIABILITY

TO THE FULL EXTENT ALLOWED BY LAW, 3COM ALSO EXCLUDES FOR ITSELF AND ITS SUPPLIERS ANY LIABILITY, WHETHER BASED IN CONTRACT OR TORT (INCLUDING NEGLIGENCE), FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE OR PROFITS, LOSS OF BUSINESS, LOSS OF INFORMATION OR DATA, OR OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR INTERRUPTION OF ITS PRODUCTS, EVEN IF 3COM OR ITS AUTHORIZED RESELLER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, AND LIMITS ITS LIABILITY TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE PAID, AT 3COM'S OPTION. THIS DISCLAIMER OF LIABILITY FOR DAMAGES WILL NOT BE AFFECTED IF ANY REMEDY PROVIDED HEREIN SHALL FAIL OF ITS ESSENTIAL PURPOSE.

DISCLAIMER

Some countries, states, or provinces do not allow the exclusion or limitation of implied warranties or the limitation of incidental or consequential damages for certain products supplied to consumers or the limitation of liability for personal injury, so the above limitations and exclusions may be limited in their application to you. When the implied warranties are not allowed to be excluded in their entirety, they will be limited to the duration of the applicable written warranty. This warranty gives you specific legal rights which may vary depending on local law.

GOVERNING LAW

This Limited Warranty shall be governed by the laws of the State of California, U.S.A. excluding its conflicts of laws principles and excluding the United Nations Convention on Contracts for the International Sale of Goods.

3Com Corporation, 5400 Bayfront Plaza, Santa Clara, CA 95052-8145 (408) 764-5000

Downloaded from www.Manualslib.com manuals search engine